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SCIENTIFIC PAPERS.

NOTES ON THE GRASSES IN THE BERNHARDI HERBARIUM, COLLECTED BY THADDEUS HAENKE, AND DESCRIBED BY J. S. PRESL.

BY F. LAMSON-SCRIBNER.

In the Bernhardi Herbarium, which, through the earnest solicitations of the late Dr. George Engelmann, was acquired by the founder of the Missouri Botanical Garden,* are a large number of the specimens which represent the types or co-types of the species described by J. S. Presl in C. B. Presl's Reliquiae Haenkeanae. This collection is especially valuable to American botanists, as it includes a large number of American species, and has recently become even more interesting to the student of American plants as it embraces very many species of our newly acquired territory in the far East — the Philippine Islands. Through the courtesy of the Director of the Missouri Botanical Garden, Dr. Wm. Trelease, I have been enabled to examine these grasses, of which 121 species of the 334 described by Presl are represented in this collection. It may be of interest to note here that of the species described by Presl, 153 are found on the Pacific Coast of North America, most of them having been collected in Mexico, a few at Monterey, California, and a limited number at Nootka Sound; 102 species are from South America, chiefly from Peru; 56 species are from the Philippine Islands, chiefly from Luzon. The localities of 15 or 20 more species described by Presl were unknown to him.

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* Rept. Mo. Bot. Gard. **2** : 25. **8** : 19.

Presl described 15 new genera, of which three are now retained, viz.: *Pereilema*, *Epicampes*, and *Cathestecum*. The others have either been reduced to other genera or had previously been characterized. He described as new 334 species of grasses, and very many of these are now maintained as good species. Some have been reduced to varieties of other species, while not a few had already been published by older authors.

The volume of Reliquiae Haenkeanae, in which the grasses are described, was published in 1830, and very naturally contains the original descriptions of a large number of new species. The work now is quite inaccessible to ordinary students; it has long been out of print and copies when obtainable are expensive. It is hoped, therefore, that the present paper illustrating some 68 types of Presl's species of grasses, with the notes concerning some, will be of interest to American botanists. Only those species represented in the Bernhardi herbarium are referred to below. The citations of habitats are those given by Presl.

I would briefly call attention to a few of the species in the list enumerated.

Bromus secundus Presl is a variety of *Festuca rubra* with rather densely pubescent flowering glumes, found in Alaska.

Bromus virgatus is *Gouinia virgata* Scribn. = *Gouinia polygama* Fourn.

Paspalum kora Willd. = *Paspalum scrobiculatum* Linn., a species represented in the United States by No. 5760 A. H. Curtiss, 1896, collected at Jacksonville, Florida.

Poa secunda Presl appears to be without doubt *Sclerochloa californica* Munro, which has heretofore included a large number of varieties or forms and a few species which botanists did not well know what to do with. The species of this group have recently been defined in Circular No. 9, Division of Agrostology, U. S. Department of Agriculture.

Podosaemum distichophyllum is not the *Muhlenbergia distichophylla* of all recent collections, but *Muhlenbergia grandis* Vasey; which name, of course, now becomes a synonym.

These are a few of the points which this valuable collection has enabled us to settle and I only regret that we are unable to examine the entire collection.

AGROSTIS CAESPITOSA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 237 (1830). "Hab. in Peruvia?" = *Calamagrostis caespitosa* (Presl), not *C. caespitosa* Steud. *Bromidium caespitosum* Nees & Meyen in Nov. Act. Nat. Cur. **19.** Supplement 155. *Agrostis preslii* Kunth Enum. Pl. **1**: 225.—Plate 32.

AGROSTIS RIGESCENS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 237 (1830). "Hab. in Peruvia?" = *Calamagrostis rigescens* (Presl) Scribn. *Bromidium rigescens* Nees & Meyen l. c.—Plate 32.

AGROSTIS TOLUCCENSIS HBK., Presl Reliq. Haenk. **1**: 237 (1830). *A. toluccensis* HBK. Nov. Gen. et Sp. **1**: 135. "Hab. in Peruviae montanis huanoccensibus." = No. 3373 H. Pittier, Costa Rica, 1891, except for the longer flaccid leaves of this, which Hackel calls var. *flaccifolia.*—Plate 33.

ALLOTEROPSIS DISTACHYA J. S. Presl in C. B. Presl Rel. Haenk. **1**: 344. *tab. 47.* "Hab. ad Monte-Rey in California." This is *Panicum semialatum* R. Br., an Australian grass. Kunth refers the species to *Urochloa.* The locality cited by Presl is doubtless an error. The ticket on the specimen in the Bernhardi herbarium indicates that it was collected in Luzon. In one of the spikelets there was found a spikelet of an Andropogon closely wedged between the glumes. The artist at first thought that this spikelet really belonged to the specimen and accordingly drew it (fig. f. plate 23). Presl's artist made the same mistake and Presl was also deceived by the presence of this foreign spikelet to the extent of establishing his supposed new genus (*Alloteropsis*).—Plate 23.

ANDROPOGON ALTERNANS J. S. Presl in C. B. Presl Reliq. Haenk. **1**:342 (1830). "Hab. in Peruvia." = *Andropogon micranthus* Kunth Revis. Gram. **1**:165; Enum. **1**:504. *A. parvispica* Steud. *Chrysopogon violaceus* Trin. The locality given by Presl (Peru) is probably an error as the species belongs to the eastern hemisphere. It occurs in Australia, China, and the Philippines.

ANDROPOGON FUSCUS J. S. Presl in C. B. Presl Reliq. Haenk. **1**:342 (1830). "Hab. in Luzonia." = *Andropogon serratus β nitidus* Hackl. in DC. Monog. Phan. **6**:521. *Sorghum nitidum* Pers. Synops. **1**:101.

ANDROPOGON GRACILIS J. S. Presl in C. B. Presl Reliq. Haenk. **1**:336 (1830). "Hab. in montanis Peruviae huanoccensibus." = *Andropogon tener* Kunth Revis. Gram. **2**: 565.

ANDROPOGON MALACOSTACHYUS J. S. Presl in C. B. Presl Reliq. Haenk. **1**:337.—"Hab. ad Acapulco." Guatemala and Costa Rica ex Hack. *A. malacostachyus* Fourn. Pl. Mex. **2**: 62 is *A. hirtiflorus* var. *oligostachyus* Hack. *A. oligostachyus* Chapm.—Plate 3.

ANDROPOGON TENELLUS J. S. Presl in C. B. Presl Reliq. Haenk. **1**:335. = *A. brevifolius* Sw. Prod. Fl. Ind. Occ. 26.—"Hab. in Mexico." This species is distributed throughout the tropical and sub-tropical regions of both hemispheres. No. 1771, Pringle, from Mex. (1888) in Natl. Herb.—Plate 2.

ANTHEPHORA VILLOSA Spreng., J. S. Presl in C. B. Presl Reliq. Haenk. **1**:325 (1830). "Hab. in Mexico ad Acapulco." = *A. elegans* Schreb. Beschr. Graes. **2**:105. *t. 44.*

ARISTIDA LONGIRAMEA J. S. Presl in C. B. Presl Reliq. Haenk. **1**:224 (1830). "Hab. in Mexico."—*Aristida appressa* Vasey Contrib. Natl. Herb. **1**:282 (1893) is the same.—Plate 26.

ARISTIDA NIGRESCENS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 223 (1830). "Hab. in Mexico." = 501a E. Palmer 1886 coll., from Mexico. — Plate 27.

AVENA PILOSA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 253 (1830). "Hab. in Cordilleris chiliensibus." = *Trisetum subspicatum* Beauv. — Plate 38.

BERCHTOLDIA BROMOIDES J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 324. *t. 43.* (1830). "Hab. in Mex." = *Chaetium bromoides* Benth. in Journ. Linn. Soc. **19**: 46. (1881). — Plate 25.

BRIZOPYRUM BOREALE J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 280 (1830). "Hab. in sinu Nootka." = *Distichlis spicata* (L.) Greene. — Plate 48.

BRIZOPYRUM PILOSUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 280 (1830). "Hab. ad Acapulco." = *Jouvea pilosa* (Presl) Scribn., staminate plant only. — Plate 48.

BROMUS SECUNDUS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 263 (1830). "Hab. in sinu Nootka." ≐ FESTUCA RUBRA SECUNDA (Presl) Scribn. new name. *Festuca rubra arenaria* ex char. Grisebach in Ledeb. Flor. Ross. *F. arenaria* Rupr. is cited by Grisebach as a synonym. It is not *F. arenaria* Lam. Specimens of this species are in the National Herbarium, and range from Alaska southward to Oregon. — Plate 52.

BROMUS SETIFOLIUS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 261 (1830). "Hab. in Cordilleris chiliensibus, in Mexico?" This species does not appear in any of our recent Mexican collections. — Plate 52.

BROMUS VIRGATUS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 263 (1830). "Hab. in montanis Peruviae, in Mexico?" = *Gouinia virgata* (Presl) Scribn. U. S. Dept. Agr. Div. Agrost., Bull. 4: 10 (1897). *Gouinia polygama* Fourn. *Festuca fournieriana* Hemsl.

CALOTHECA MICROSTACHYA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 268 (1830). "Hab. in montanis Peruviae." = *Briza microstachya* Steud. Nom. ed. 2. **1**: 225 (1840). 477 Liebman from Mexico, referred by Fournier to *Chascolytrum subaristatum* Rupr, is the same.

CAMPULOSUS PLANIFOLIUS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 287 (1830). "Hab. in Mexico." *Ctenium glandulosum* Scribn. & J. G. Smith in Bot. Gaz. **21**: 362. *pl. 29* (1896) is the same. — Plate 42.

CENCHRUS ALOPECUROIDES J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 317 (1830). "Hab. . . . . . ." There is in the National Herbarium a specimen collected at Callao by the Wilkes Exploring Expedition, which is identical with Presl's species. It is ticketed in Munro's handwriting *Cenchrus alopecuroides* HBK. Presl's *C. alopecuroides* appears to be too close to *C. myosuroides* HBK. for a clear separation.

CENTOTHECA LAPPACEA Desv., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 258 (1830). "Hab. in insula Luzon, et in insulis Marianis." = *Centotheca lappacea* Desv. in Nouv. Bull. Soc. Philom. **2**: 189 (1810). *Cenchrus lappaceus* Linn. Tropical regions of both hemispheres.

CERATOCHLOA HAENKEANA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 285. "Hab. in Cordilleris chiliensibus, inque montanis Peruviae." = *Bromus unioloides* HBK. Nov. Gen. et Spec. **1**: 151. — Plate 54.

CHASCOLYTRUM SPICIGERUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 282 (1830). "Hab. in Peruviae montanis et in Chili." = *Briza spicigera* Steud. Nom. ed. 2. **1**: 225. — Plate 49.

CHLORIS ALBA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 289. "Hab. in Mexico." = *Chloris elegans* HBK. Of "*C. alba*" there is but a fragment showing only the inflorescence and a bit of the culm. On the sheet there is a good specimen of *C. truncata* R. Br. which is the species shown in the illustration. — Plate 41.

CHLORIS GRACILIS Durand Chlor. 10, J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 289 (1830). "Hab. in Panama, Mexico." = *Chloris radiata* Sw. Flor. Ind. Occ. **1**: 201. Kunth Gram. **2**. *t. 179.*

CLOMENA PERUVIANA Beauv., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 232 (1830). "Hab. in Mexico." = *Muhlenbergia clomena* Trin. Unifl. 194. *Clomena peruviana* Beauv. Agrost. 28. *t. 7. f. 10.*

CYNODON ARCUATUS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 290 (1830). "Hab. in Luzonia." — Plate 40.

CYNODON LINEARIS Willd., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 290 (1830). "Hab. in Luzonia." = *Cynodon dactylon* Pers. Syn. Pl. **1**: 85.

CYNODON TENER J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 291 (1830). "Hab. ad Sorzogon Luzoniae." I would refer this grass to *Chloris* sect. *Eustachys*. C. TENER (Presl) Scribn. new name. Very close to small forms of *C. petraea* Sw. — Plate 40.

DESCHAMPSIA CALYCINA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 251 (1830). "Hab. ad Monte-Rey Californiae." = *Aira danthonioides* Trin. in Act. Hort. Petrop. (1830). — Plate 37.

DEYEUXIA DENSIFLORA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 247 (1830). = *Calamagrostis densiflora* Steud. Nom. ed. 2. **1**: 250. "Hab. in Peruviae montanis huanoccensibus." See *Deyeuxia intermedia*. — Plate 35.

DEYEUXIA FUSCATA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 249 (1830). = *Calamagrostis fuscata* Steud. Nom. ed. 2. **1**: 250. "Hab. in Peruviae montanis huanoccensibus." — Plate 36.

DEYEUXIA INTERMEDIA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 249 (1830). "Hab. in montanis huanoccensibus Peruviae." = *Calamagrostis intermedia* Steud. Nom. ed. 2. **1**: 250, not *C. intermedia* Lindb. ex Nym. Consp. 799. From the specimens in the collection it is not possible to distinguish this species from *Calamagrostis densiflora* Steud.

DEYEUXIA OVATA J. S. Presl in C. B. Presl Reliq.

Haenk. **1**: 246. "Hab. in montanis Peruviae huanoccensibus." = *Calamagrostis ovata* Steud. Nom. ed. 2. **1**: 251. — Plate 35.

DEYEUXIA TOLUCCENSIS HBK., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 249 (1830). "Hab. in Peruviae montanis huanoccensibus." Label on spec. in Herb. Bernhardi, Mo. Bot. Garden, reads β *glabra*. = *Calamagrostis toluccensis* Trin. ex Steud. Nom. ed. 2. **1**: 250.

DIECTOMIS ANGUSTATA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 333 (1830). "Hab. in Mexico." = *Andropogon apricus* Trin. in Mem. Acad. Peters. VI. **4**: 83 (1836). The species appears to have first been published by Nees in Agrost. Bras., p. 340, under the name of *Diectomis laxa*, a name already occupied in *Andropogon*. There is not the same objection to *angustatus* which was taken up by Steudel, and ought to be retained. — Plate 4.

DIECTOMIS FASTIGIATA Beauv., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 332 (1830). "Hab. in Mexico." = *Andropogon fastigiatus* Sw. Prodr. p. 26. *Diectomis fastigiata* Humb. et Bonpl. ap. Willd. Spec. **4**: 741; Kunth in HBK. Nov. Gen. et Sp. 1. *t. 64*, excl. cit. Beauv.

"DINEBA BROMOIDES HBK.," J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 292 (1830). "Hab. in Mexico, Guayaquil." The specimen represented in the collection is *Bouteloua curtipendula* (Mx.) Torr.

DINEBA CURTIPENDULA Cand., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 292 (1830). "Hab. ad Acapulco." = *Bouteloua curtipendula* (Mx.) Torr. in Emory's Report 153 (1848). *Chloris curtipendula* Michx. Fl. Bor. Am. **1**: 59 (1803). *Bouteloua racemosa* Lag. (1805).

DIPLACHNE BREVIFOLIA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 261 (1830). "Hab. in montanis Peruviae huanoccensibus." = *Festuca haenkei* Kunth Enum. Pl. **1**: 403. — Plate 43.

DIPLACHNE RIGESCENS J. S. Presl in C. B. Presl Reliq. Haenk. **1**:260 (1830). "Hab. in montanis Peruviae huanoccensibus." = *Festuca rigescens* Kunth Enum. Pl. **1**:403. — Plate 43.

ELIONURUS CILIARIS HBK., J. S. Presl in C. B. Presl Reliq. Haenk. **1**:332 (1830). "Hab. in Mexico." = *E. tripsacoides* HBK. var. *ciliaris* Hack. in DC. Monog. Phan. **6**:333. *E. ciliaris* Kunth in HBK. Nov. Gen. et Sp. **1**: 193. *t. 63*.

ERAGROSTIS ALBA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 279 (1830). "Hab. ad Monte-Rey, California." Apparently allied to, and possibly identical with *Poa pastoensis* HBK. See Kunth Gram. *t. 145*. — Plate 44.

ERAGROSTIS CILIARIS Link, J. S. Presl in C. B. Presl Reliq. Haenk. **1**:274 (1830). "Hab. in Mexico, Panama."

ERAGROSTIS ELONGATA Jacq., J. S. Presl in C. B. Presl Reliq. Haenk. **1**:275 (1830). "Hab. in Luzonia? in vallibus Cordillerarum Peruviae?" = *Eragrostis elongata* (Willd.) Jacq. Eclog. Gram. *t. 3*. *Poa elongata* Willd. Enum. **1**:108. Allied to *E. brownei* Nees, but the flowering glumes are more acute.

ERAGROSTIS LURIDA J. S. Presl in C. B. Presl Reliq. Haenk. **1**:276 (1830). "Hab. in montanis Peruviae." — Plate 45.

ERAGROSTIS PANAMENSIS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 277. "Hab. in Panama." = *Eragrostis maypurensis* (HBK.) Steud. Nom. Pl. 2. 276. *Poa maypurensis* HBK. Nov. Gen. et Sp. **1**: 161. — Plate 47.

ERAGROSTIS REPTANS Nees, J. S. Presl in C. B. Presl Reliq. Haenk. **1**:275 (1830). "Hab. in Mexico et Guayaquil." = *Eragrostis hypnoides* (Lam.) BSP. Prel. Cat. N. Y. 69 (1888). *Poa hypnoides* Lam.

ERAGROSTIS SECUNDIFLORA, J. S. Presl in C. B. Presl Reliq. Haenk. **1**:276 (1830). — "Hab. in Mexico." *Eragrostis oxylepis* Nutt is the same.

ERAGROSTIS TENELLA Beauv., J. S. Presl in C. B. Presl

Reliq. Haenk. **1**: 274 (1830). "Hab. in Marianis insulis et in Luzonia ad portum Sorzogon." = *E. plumosa* Link Hort. Berol. **1**: 192. — Plate 44.

HETEROPOGON FIRMUS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 334 (1830). "Hab. in Mexico." = *Andropogon contortus* var. *secundus* Hack. in DC. Monog. Phan. **6**: 587. *A. secundus* Willd. *A. allionii* HBK. and *A. firmus* Kth.

HEXARRHENA CENCHROIDES J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 326. *tab. 45* (1830). "Hab. in Mexico." = *Hilaria cenchroides* HBK. Nov. Gen. et Sp. **1**: 117. The specimen represents a tall form with bearded nodes, scabrous leaves, and with the divisions of the outer glumes ciliate, *Hilaria cenchroides ciliaris* Scribn. in Proc. Acad. Nat. Sci. Phil. **1891**: 293. — Plate 5.

HIEROCHLOE ARCTICA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 252 (1830). "Hab. in sinu Nootka." = *Savastana odorata* (L.) Scribn. Identical with 391 Walter H. Evans from near Kadiak, Alaska, 1897, in National Herbarium.

HORDEUM COMOSUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 327 (1830). "Hab. in Chili." — Plate 54.

HORDEUM PRATENSE Huds., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 327 (1830) var. *γ*. "Hab in Cordilleris chiliensibus et Mexico." = *Hordeum secalinum* Schreb. Spicil. Flor. Lips. 148.

ISCHAEMUM POLYSTACHYUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 328 (1830). "Hab. in insulis Marianis." = *Ischaemum digitatum β polystachyum* Hack. in DC. Monog. Phan. **6**. Androp. p. 233. *Andropogon mariannae* Steud.

LEERSIA LUZONENSIS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 207 (1830). "Hab. in insula Luzonia." = *Leersia hexandra* Sw. Prod. Veg. Ind. Occ. 21.

LEPTOCHLOA FILIFORMIS R. & S., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 288 (1830). "Hab. in Mexico, ad

Sorzogon, Luzoniae." = *Leptochloa mucronata* Kunth Revis. Gram. **1**: 91.—*L. filiformis* R. & S. = *L. cynosuroides* R. &. S.

Lycurus phalaroides HBK., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 232 (1830). "Hab. in Mexico." = *L. phalaroides* HBK. Nov. Gen. et Sp. **1**: 142.

Manisuris granularis Swartz, J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 332 (1830). "Hab. in Mexico, Acapulco, Panama, California."

Megastachya panicoides J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 283 (1830). "Hab. in Mexico ad Acapulco, verosimiliter in lutosis." = *Eragrostis panicoides* Steud. —Plate 47.

Monopogon avenaceus J. S. Presl in C. B. Presl Reliq. **1**: 324. *t. 44* (1830). "Hab. in Mexico." = *Tristachya leiostachya* Nees Agrost. Bras. 459 (1829).—Plate 39.

Nowodworskya agrostoides J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 239 (1830).* "Hab. in Peruviae montanis huanoccensibus." = *Polypogon elongata* HBK. Nov. Gen. et Sp. **1**: 134 (1815), not Lagasca (1816).—Plate 31.

Oplismenus colonus HBK., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 321 (1830). "Hab. in insula Luzon, Guaham." = *Panicum colonum* Linn. Syst. ed. 10. 87.

Oplismenus tenuis J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 319 (1830). "Hab. in Mexico, Panama." = *Ichnanthus candicans* Doell in Mart. Flor. Bras. **2**^{2}: 291. *Panicum candicans* Nees Agrost. Bras. **2**: 133(1829).—Plate 24.

Oryza minuta J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 208 (1830). "Habitata in insula Luzonia."

Oryza sativa J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 208 (1830). "Hab. in Mexico." An awnless variety.

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* In text, *Raspalia agrostoides*, but changed in "Addenda et corrigenda" p. 351, to *Nowodworskya*.

PANICUM AURITUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 305 (1830). "Hab. ad Sorzogon Luzoniae." First published by Nees ab Esenb. in Mart. Flor. Bras. **2**: 176. = No. 81 Flor. Singapore, in Natl. Herbarium. — Plate 15.

PANICUM BRIZAEFORME J. S. Presl in C. B. Presl Reliq. **1**: 302 (1830). "Hab. in Luzonia." = *Panicum paspaloides* Pers. Syn. **1**: 81 (1818). — Plate 16.

PANICUM CARINATUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 309 (1830). "Hab. in insula Luzonia ad Sorzogon; β. in Mexico?" This species has been referred to *P. trigonum* Retz. by Hackel (see specimen in Nat. Herb. from India, collected by Anderson). Another specimen in Nat. Herb. is from Assam, collected by the Reporter on Economic Products to the Government of India. In both of these specimens as well as in that of Presl the spikelets are glabrous while those of *P. trigonum* are described as having hispid outer glumes. A grass from China, collected by Ridley, and now in the Nat. Herb. under the name of *P. trigonum* Retz., has hispid outer glumes. The spikelets and general habit of this grass agree with those of *P. carinatum*, but the leaves are shorter and taper to an acute or narrow not a cordate base. *P. carinatum* Presl is certainly closely allied to and perhaps identical with *P. radicans* Retz., *P. accrescens* Trin. Icon. Gram. **8**. *t. 88*. — Plate 17.

PANICUM CONVOLUTUM Beauv., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 304 (1830). "Hab. ad Sorzogon Luzoniae." = *Panicum repens* Linn. Sp. Pl. ed. 2. 87. Tropical and subtropical regions of both hemispheres. No. 2879 Ridley in Natl. Herbarium from China (1893) is the same.

PANICUM FIMBRIATUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 298 (1830). This is the same as *Digitaria fimbriata* Link, which Nash retains as a species under *Syntherisma* (Bull. Torr. Bot. Club **25**: 302). By most authors it has been reduced to *Panicum sanguinale* L. — Plate 18.

PANICUM HIRTICAULUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 308 (1830). "Hab. ad Acapulco, Mexico." Allied to *P. capillare* L. but quite distinct. It is not an uncommon grass in the southwestern United States. There is a specimen of this species in the National Herbarium collected in Washington, near Bingen, Klickitat Co., No. 2330 Suksdorf, 1894. — Plate 19.

PANICUM MILIIFORME J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 300 (1830). "Hab. in Luzonia." The specimen, of which there is only a fragment, suggests a close relationship to *P. marginatum* R. Br. It resembles that species in foliage, inflorescence, and general appearance of the spikelets, but is evidently quite distinct. — Plate 20.

PANICUM MULTINODE J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 303 (1830). "Hab. ad Sorzogon Luzoniae." = *P. nodosum* Kunth Enum. Pl. **1**: 97, not *P. multinode* Lam.

PANICUM MYURUS Meyer, J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 313 (1830). "Hab. in Peruviae, Mexico, et ad Monte-Rey, California." = *Panicum amplexicaule* Rudge Guian. **1**: 21. *t. 27;* Trinius Sp. Gram. Icon. *t. 205.* No. 1030 Morong from Paraguay, in Natl. Herbarium is this species.

PANICUM PHLEIFORME J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 302. "Hab. in Mexico." No. 2363 C. G. Pringle 1889, distributed as *P. indicum* L., is *Panicum phleiforme* Presl. The two species are very closely related. — Plate 21.

PANICUM POLYRRHIZUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 296 (1830). "Hab. ad Monte-Rey Californiae." = *Paspalum distichum* L. — Plate 21.

"PANICUM PUBESCENS Lam." J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 306 (1830). 'Hab. in Nootka-Sund."

There are two specimens and two labels on the sheet. One, in Presl's handwriting, reads "*Panicum pubescens* Michx," and doubtless applies to the smaller specimen which is identical with specimens in the Nat. Herb. from Washington, *e. g.* No. 3978, A. A. & E. Gertrude Heller 1898. The other label reads "77 *Panicum pubescens* Ell. 1833, Beyrich." This applies to the second specimen which must have come from the southern or southwestern States, and is *Panicum angustifolium* Ell. The other specimen does not fully agree with any of our eastern species and may well be named P. OCCIDENTALE Scribn. nom. nov. *P. pubescens* Presl, not Lam. nor Michx.

PANICUM STIPATUM J. S. Presl in C. B. Presl Rel. Haenk. **1**: 297 (1830). "Hab. in Mexico, Luzon?" = *Syntherisma setosa* (Desv.) Nash. *Digitaria setosa* Desv. Hamil. Prod. Pl. Ind. Occ. **6** (1825). The spikelets in Presl's specimen are a very little (about 0.2 mm.) longer than in the West Indian plant represented by 764 C. Wright, but otherwise I can detect no difference. No. 3049 E. W. Nelson, from Chiapas, Mex., 1895, is the same. — Plate 22.

PANICUM TRICHANTHUM Nees, J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 309 (1830). "Hab. in Mexico." = *Panicum brevifolium* Linn. Sp. Pl. 59. No. 1758 E. Palmer, Mexico, 1891.

PASPALUM ATTENUATUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 212 (1830). "Hab. in montanis Peruviae huanoccensibus." See *P. scoparium* Flügge. Properly belongs to *Syntherisma*. — Plate 8.

PASPALUM BRACTEATUM Presl in herb. *Paspalum bracteatum* is only a herbarium name, and the sheet thus ticketed contains two species, viz.: *P. firmum* Trin. Diss. **2**: 105, and Icon. *t. 125*, referred to *P. scrobiculatum* L. by many authors; and *P. longifolium* Roxb. Hort. Beng. 7; Trin. Icon. *t. 138*. This has also been referred to *P. scrobicula-*

tum by some, but it is abundantly distinct from that species. *P. firmum* is the species illustrated. — Plate 9.

PASPALUM CARTILAGINEUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 216 (1830). "Habitat in insula Luzonia ad Sorzogon, in Marianis." = *Paspalum scrobiculatum* L.

PASPALUM CONJUGATUM Berg., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 210 (1830). "Hab. in Mexico." *Paspalum conjugatum* Berg. in Act. Helv. **7**: 129. *t. 8* (1772); Trin. Icon. *t. 102.* All tropical regions.

PASPALUM COMPRESSUM (Swartz) Nees, J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 212 (1830). "Hab. in Mexico." = *Milium compressum* Swartz Prod. 24.

PASPALUM FILIFORME Swartz, J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 214 (1830). "Hab. in Luzonia? Mexico." = *Syntherisma filiforme* (L.) Nash in Bull. Torr. Bot. Club **22**: 420 (1895). *Panicum filiforme* L. Doell in Mart. Flora Bras. refers *Paspalum filiforme* Swartz to *Paspalum caespitosum* Flügge.

PASPALUM FUSCESCENS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 213 (1830). "Hab. ad Monte-Rey Californiae." = SYNTHERISMA FUSCESCENS (Presl) Scribn. new name. — Plate 10.

PASPALUM FUSCUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 214 (1830). "Hab. in Luzonia? in Peruviae montanis huanoccensibus? Mexico?" = SYNTHERISMA FUSCA (Presl) Scribn. new name. Presl was evidently in doubt as to the locality. South America is cited for the locality in the Kew Index. — Plate 11.

PASPALUM HUMBOLDTIANUM Flügge in C. B. Presl Reliq. Haenk. **1**: 217 (1830). "Hab. in Mexico." = *Paspalum humboldtianum* Flügge Gram. Monog. 67; HBK. Nov. Gen. et Sp. Pl. **1**: 86. *tab. 23.* Mexico and tropical America. No. 286 E. Palmer from Guadalajara, Mexico, 1886.

PASPALUM HAENKEANUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 210 (1830). "Hab. in montanis huanoccensibus Peruviae." This is *Paspalum mandiocanum* Trin. var. *a. ellipticum* Doell in Mart. Flor. Bras. 2^2: 80, and is represented in the National Herbarium by No. 356 Loefgren (1887). The species is, I think, a good one and Presl's name should be retained. — Plate 12.

PASPALUM LENTIGINOSUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 218 (1830). "Hab. in Mexico." E. Palmer's No. 1556 (1891) from Culiacan, Mexico, and distributed as *Paspalum paniculatum* L. is *P. lentiginosum* Presl. — Plate 13.

PASPALUM KORA Willd., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 216 (1830). "Hab. in insulis Marianis et Philippinis." *Paspalum kora* Willd. Sp. Pl. **1**: 332; Hort. Berol. *t. 74*. = *P. scrobiculatum* Linn. Mant. **1**: 29. All tropical countries. Florida specimens referable to this species are 5760 A. H. Curtiss 1896 collected at Jacksonville, Aug. 24.

PASPALUM MOLLE J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 213 (1830). "Hab. in Luzonia." = SYNTHERISMA MOLLE (Presl) Scribn. new name. *Paspalum mollicomum* Kth. Enum. Pl. **1**: 47. Allied to *Syntherisma serotina* Walt.

PASPALUM PUBESCENS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 214 (1830). "Hab. in regione montana Peruviana." = SYNTHERISMA PUBESCENS (Presl) Scribn. new name. *Paspalum preslii* Kunth Enum. Pl. **1**: 47. — Plate 10.

PASPALUM SCOPARIUM Flügge Monog. 125; J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 213. "Hab. in Peruviae montanis huanoccensibus." Doell unites *P. attenuatum* Presl with this, but that species is quite distinct although nearly allied. It is a much smaller species with spikelets hardly half the size of those in *P. scoparium*.

PEREILEMA CRINITUM J. S. Presl in C. B. Presl Reliq.

Haenk. **1**: 233. *tab. 37. f. a* (1830). "Hab. in Panama." Not *P. crinitum* Trin. — Plate 29.

Piptatherum punctatum Beauv., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 221 (1830). "Hab. in Mexico, Guajaquil." = *Eriochloa polystachya* HBK. Nov. Gen. et Sp. **1**: 95.

Poa holciformis J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 272 (1830). "Hab. in Cordilleris chiliensibus." This grass has the habit and aspect of some of the species in the group containing *P. fendleriana* but is apparently distinct from any North American form. — Plate 50.

Poa nootkaensis J. S. Presl in C. B. Presl. Reliq. Haenk. **1**: 272 (1830). "*Poa nutkaensis*" in the text. "Hab. in sinu Nootka? in Mexico?" There is a question of doubt on the part of Presl as to where the specimens were collected, but they certainly must have come from Nootka Sound, as the grass does not occur in Mexico. The species ranges on the Pacific Coast from Washington northward and on the Atlantic Coast from Mt. Desert off the coast of Maine northward to the Arctic regions. = *Puccinellia angustata* Nash in Bull. Torr. Bot. Club **22**: 512 (1895). *Poa angustata* R. Br. in Parry's First Voy. Suppl. 287 (1823). *Glyceria angustata* Fries. *Atropis angustata* Griseb. in Ledeb. Flor. Ross. — Plate 51.

Poa secunda J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 271. "Hab. in Cordilleris chiliensibus." The specimen consists of the upper portion of the culm with uppermost leaf and panicle. Judging from this material I would without hesitation refer to *Poa secunda* No. 1122 Brewer, from California, and 2035 Hartweg also from California, which Munro named *Sclerochloa californica*. This is quite distinct from *Poa fendleriana* (Steud.) Vasey. — Plate 51.

Podosaemum distichophyllum J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 231 (1830). "Hab. in Mexico." = *Muhlenbergia distichophylla* Kunth Enum. Pl. **1**: 202.

Muhlenbergia grandis Vasey Contrib. U. S. Nat. Herb. **1**: 283 (1893) is identical with this species. The *Muhlenbergia* which is common in New Mexico and Arizona and which has been referred to *M. distichophylla* by most American authors (Vasey in Bot. Wheeler 283 and in Contrib. U. S. Nat. Herb. **3**: 66), is a very distinct species and may be named MUHLENBERGIA VASEYANA Scribn. new name. *M. emersleyi* Vasey in Contrib. Nat. Herb. **3**: 66 (1892) differs only in being somewhat more robust and in having the empty glumes distinctly longer than the flowering glume which is more hairy on the back. — Plate 28.

PODOSAEMUM TENUISSIMUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 230 (1830). "Hab. in Panama et in Mexico." = *Muhlenbergia tenuissima* Kunth Enum. Pl. **1**: 198. *Muhlenbergia nebulosa* Scribn., in Beal Grasses N. Am. **2**: 247 (1896) is a synonym. — Plate 29.

POGONOPSIS TENERA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 333. *tab. 46.* The locality "Hab. in Mexico" is probably an error as the grass is an East Indian species. Presl's specimens were probably collected in the Philippines. Hackel reduces *P. tenera* Presl to a variety of *P. saccharoideum* Beauv. *β monandrum* Hack. in DC. Monog. Phanerog. **6**: 193. *Pollinia monandra* Spreng., *Andropogon crinitus* Thunb. and *Pogonatherum refractum* Nees are synonyms. — Plate 2.

SACCHARUM SPICATUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 346 (1830). "Hab. in insula Luzonia." = *Imperata arundinacea* var. *koenigii* Hack. in DC. Monog. Phan. **6**: 94. *I. koenigii* Benth. Flor. Hongk. p. 419. — Plate 1.

SETARIA GLOBULARIS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 314 (1830). "Hab. insularis Philippinis." There are three species on the sheet. One is CHAETOCHLOA CAUDATA (Lam.) Scribn. new name, *Panicum caudatum* Lam., and is matched in the Nat. Herb. by specimens from the ballast grounds at Mobile and also from Brazil. One is *Chaetochloa composita* (Kth.) Scribn. and is represented in the Nat. Herb. by No. 1897 A. A. Heller, collected at Kerville, Texas, and by other Texan and Mexican specimens. The third specimen is not determinable.

SETARIA PENICILLATA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 314 (1830). "Hab. in Mexico." = *Panicum penicillatum* Willd. herb.; Nees. Agrost. Bras. p. 242. *Chaetochloa penicillatum* (Willd.) Scribn. Bull. U. S. Dept. Agr., Div. Agrostology 4: 39.

SPOROBOLUS CILIATUS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 242 (1830). "Hab. in Panama."—Plate 30.

SPOROBOLUS HUMILIS J. S. Presl in C. B. Presl Reliq. Haenk. **1**; 241 (1830). "Hab. in insula Luzonia."—Plate 30.

SPOROBOLUS REPENS J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 241 (1830). "Hab. in Mexico." *Vilfa repens* Trin. in Mem. Acad. Petersb. Sc. Nat. IV. **5** : 102 (1840) is a synonym. The grass is essentially *Vilfa utilis* Torr. Fournier separates this species, *S. repens*, from his *Vilfa saccatilla* by its elongated ligule.—Plate 30.

STREPTACHNE PILOSA HBK., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 225 (1830). "Hab. ad Acapulco in Mexico." = *Aristida jorullensis* Kunth Revis. Gram. **1**: 62. Identical with No. 36 E. Palmer in Nat. Herb. from Mexico and distributed as *Aristida pilosa* (Nees), and No. 3334 H. Pittier from Rodeo de Pacaca, Costa Rica, 1891.

STREPTACHNE SCABRA HBK., J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 225 (1830). "Hab. in Mexico." = *Aristida scabra* Kth. Revis. Gram. **1**: 62.

THYSANACHNE PERUVIANA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 253 (1830). "Hab. in montanis huanoccensibus Peruviae." = *Arundinella deppeana* Nees in Bonplandia **3**: 84 (1855). *Arundinella crinita* Trin. in Linnaea **10**: 299 (1836), from Peru, may be the same. I have no material for comparison. *Arundinella peruviana* Steud. Syn. Gram. 115 is based upon Presl's *Thysanachne peruviana*. — Plate 6.

THYSANACHNE SCOPARIA C. B. Presl Thysan. Nov. Pl. Gen. (1829); et J. S. Presl in Reliq. Haenk. **1**: 253. = *Arundinella deppeana* Nees. "Hab. in Mexico." — Plate 7.

TRICHODIUM ALBUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 244 (1830). "Hab. in sinu Nutkaensis." = *Agrostis nutkaensis* Kunth Enum. Pl. **1**: 222. The specimen is fragmentary, but it is clearly the tall grass common in collections from Oregon and Washington which has been referred to *Agrostis scabra* Willd. or *A. laxiflora* Rich. — Plate 34.

TRICHODIUM NANUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 243 (1830). "Hab. in Peruvia?" = *Agrostis nana* Kunth Enum. Pl. **1**: 266. — Plate 34.

UROCHLOA PASPALOIDES J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 318 (1830). "Hab. in Luzonia ad Sorzogon." = *Panicum ambiguum* Trin. in Mem. Acad. Petersb. VI. **3**^{2}: 243 (1835). This grass is quite distinct from *Urochloa panicoides* Beauv. which has been cited as a synonym by some authors. — Plate 14.

UROCHLOA UNISETA J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 319 (1830). = *Ixophorus unisetus* Schlecht. in Linnaea **31**: 420 (1861–62). *Panicum palmeri* Vasey. See Bull. U. S. Dept. Agr., Div. Agrost. 4: 6. *pl. 1* (1887).

VULPIA MYURUS Link, J. S. Presl in C. B. Presl. Reliq. Haenk. **1**: 260 (1830). "Hab. in montanis Peruviae." Three varieties are mentioned: *α* panicula simplicissima spicaeformi; *β* panicula simplici subspicaeformi. "Hab. as *α*"; *γ* panicula simplici subspicaeformi, paleis inferioribus ciliatus. "Hab. in Chili." There are three specimens on the sheet and neither one seems to be var. *β* = *Festuca myurus* Linn. Sp. Pl. 74.

XYSTIDIUM BARBATUM J. S. Presl in C. B. Presl Reliq. Haenk. **1**: 228 (1830). "Hab. in insula Luzonia." = *Perotis rara* R. Br. Prod. 72.

EXPLANATION OF PLATES ILLUSTRATING PRESL GRASSES.

All of the illustrations, executed under my direction by Mrs. M. D. B. Willis, née Baker, unless otherwise stated were drawn from specimens in the herbarium of the Missouri Botanical Garden, labeled in Presl's handwriting, and unless otherwise noted the habit-sketches have been reduced one-half. The enlargement of the details is sufficiently indicated by the enlarged scale accompanying them.

Plate 1. *Saccharum spicatum* Presl. Island of Luzone. — a, Spikelet; b, dorsal view of first glume; c, dorsal view of second glume; d, pistil; e, flowering glume; f, palea.

Plate 2. 1, *Pogonopsis tenera* Presl. Mexico. — a, A pair of spikelets; b, first glume; c, second glume; d, flowering glume; e, palea — all of the sessile spikelet. 2, *Andropogon tenellus* Presl. — a, Spikelet; b, first glume; c, second glume; d, third glume; e, flowering or fourth glume.

Plate 3. *Andropogon malacostachyus* Presl. Acapulco. Natural size. — a, Joint of the rachis with sessile and pedicellate spikelets; b, first glume; c, second glume; d, third glume; e, flowering glume; f, lodicules.

Plate 4. *Diectomis angustata* Presl. — a, Pair of spikelets showing joint of rachis and side view of sessile spikelet; b, pistillate spikelet; c, first glume; d, second glume; e, third glume; f, flowering glume; g, palea and lodicules; h, pistil; i, stamens — all belonging to the sessile and fertile spikelet; k, first glume; l, second glume; m, third glume; n, flowering glume; o, palea with stamens and lodicules — all belonging to the pedicellate and staminate spikelet.

Plate 5. *Hexarrhena cenchroides* Presl. Mexico. — a, Group of spikelets; b, lateral spikelets; c, lateral floret, outer glumes removed; d, e, outer glumes of the pistillate spikelet; f, pistillate floret; g, palea of same; h, pistil, most of the style removed.

Plate 6. *Thysanachne peruviana* Presl. .High mountains of Peru. — a, Spikelet; b, third glume, inner view showing its palea; c, fertile flower.

Plate 7. *Thysanachne scoparia* Presl. — a, Spikelet; b, first glume; c, second glume; d, third glume; e, palea of third glume; f, flower; g, palea and lodicules.

Plate 8. *Paspalum attenuatum* Presl.— a, Spikelet showing first glume; b, spikelet showing second glume; c, dorsal view of flowering glume; d, anterior face of flowering glume with inclosed palea; e, palea, lodicules, and stigmas.

Plate 9. *Paspalum bracteatum* Presl. — a, Spikelet showing first glume; b, spikelet showing second glume; c, back of flowering glume; d, opposite face of flowering glume showing inclosed palea; e, lodicules, palea, and stigmas.

Plate 10. 1, *Paspalum fuscescens* Presl. — a, Spikelet showing first glume; b, spikelet showing second glume; c, back of flowering glume; d, anterior view of flowering glume; e, palea and lodicules, the latter drawn outside the infolded edges of the palea. 2, *Paspalum pubescens* Presl. Monterey, Cal. — a, View of spikelet showing first glume; b, same showing second glume; c, dorsal view of flowering glume; d, anterior view of same.

Plate 11. *Paspalum fuscum* Presl. — a, Spikelet showing first glume; b, spikelet showing second glume; c, dorsal view of flowering glume; d, an interior view of flowering glume; e, palea and lodicules.

Plate 12. *Paspalum haenkeanum* Presl. — a, Spikelet showing first glume; b, spikelet showing second glume; c, dorsal view of flowering glume; d, palea, lodicules, and stigma.

Plate 13. *Paspalum lentiginosum* Presl. — a, Spikelet showing first glume; b, spikelet showing second glume; c, dorsal view of flowering glume; d, anterior view of flowering glume showing inclosed palea; e, palea, lodicules, and stigmas.

Plate 14. *Urochloa paspaloides* Presl. — a, Spikelet showing back of first glume; b, spikelet showing back of second glume; c, spikelet showing back of third glume, first being removed; d, inside of third glume with inclosed palea; e, back of flowering glume; f, opposite face of flowering glume with inclosed palea.

Plate 15. *Panicum auritum* Presl. Sorzogon Luzone. — a, View of spikelet showing first glume; b, view of spikelet showing third glume; c, lateral view of spikelet; d, dorsal view of fruiting glume; e, anterior view of palea showing lodicules, stigma, and stamens.

Plate 16. *Panicum brizaeforme* Presl. — a, Spikelet showing back of first glume; b, spikelet showing back of second glume; c, side view; d, palea and stamens of third glume, also lodicules; e, back of flower; f, opposite face of flower with inclosed palea.

Plate 17. *Panicum carinatum* Presl. — a, Spikelet showing back of first glume; b, spikelet showing back of second glume; c, side of spikelet; d, back of flower; e, opposite face of flower with inclosed palea.

Plate 18. *Panicum fimbriatum* Presl. Acapulco, Mexico. Monterey, Cal. — a, View of spikelet showing first glume and back of third glume; b, view of spikelet showing second glume, and part of the fourth or flowering glume; c, back of flowering glume; d, dorsal view of palea which is nearly inclosed by the margins of the flowering glume.

Plate 19. *Panicum hirticaulum* Presl. Acapulco, Mexico. — a, Spikelet showing first glume; b, spikelet showing second glume; c, lateral view of spikelet; d, inner view of third glume, showing its palea; e, dorsal view of flowering glume; f, anterior view of floret showing palea.

Plate 20. *Panicum miliiforme* Presl. Luzone. — a, View of spikelet, showing first glume; b, view of spikelet showing the second glume; c, anterior view of third glume showing its palea; d, dorsal view of flowering glume; e, dorsal view of palea, which is partly inclosed by the flowering glume.

Plate 21. 1, *Panicum phleiforme* Presl. Mexico. Specimen fragmentary.—a, View of spikelet showing first glume and a part of third; b, view of spikelet showing second glume from the back; c, lateral view of spikelet; d, dorsal view of flowering glume; e, anterior view of same showing palea. 2, *Panicum polyrrhizum* Presl. Monterey, Cal. — a, View of spikelet showing first glume; b, view of spikelet showing second glume; c, dorsal view of flowering glume; d, anterior view of first spikelet, the outer glumes removed showing palea; e, inner view of palea showing lodicules and stamens.

Plate 22. *Panicum stipatum* Presl. — a, Spikelet showing very minute first glume; b, spikelet showing second glume; c, back of flowering glume; d, opposite face of flowering glume with inclosed palea, showing also attached palea of third glume.

Plate 23. *Alloteropsis distachya* Presl. Monterey, Cal. — a, Spikelet showing first glume; b, view of the spikelet showing second glume; c, anterior face of second glume; d, palea, lodicules, and stamen of the staminate flower; e, fertile flower. —f, Joint of a rachis, a sessile spikelet and a pedicel of a pedicellate spikelet of some species of *Andropogon.* This spikelet, from which this drawing was made, was found only in one instance, inside the third glume, occurring there through some accident doubtless. It was upon this supposed compound spikelet that Presl based his genus *Alloteropsis.* The grass, however, is a species of *Panicum.*

Plate 24. *Oplismenus tenuis* Presl. Mexico, Panama. — a, Entire spikelet; b, inner view of third glume showing its palea; c, back of flower; d, anterior view of same.

Plate 25. *Berchtoldia bromoides* Presl. — a, Side view of spikelet; b, back of spikelet showing first glume; c, opposite view of palet, showing second glume; d, third glume; e, back of flower; f, opposite view of flower showing inclosed palea.

Plate 26. *Aristida longiramea* Presl. — a, Empty glume; b, flower, showing palea and inclosed stamens.

Plate 27. *Aristida nigrescens* Presl. — a, Spikelet; b, flower; c, palea.

Plate 28. *Podosaemum distichophyllum* Presl. Mexico. — a, Empty glumes; b, spikelet, empty glumes removed; c, dorsal view of flowering glume; d, anterior view of palea, showing stamens and lodicules.

Plate 29. 1, *Podosaemum tenuissimum* Presl. Panama, Mexico. — a, Empty glumes; b, floret; c, dorsal view of flowering glume; d, stamens and pistil. 2, *Pereilema crinitum* Presl. Panama. — a, Empty glumes; b, dorsal view of flowering glume with a portion of the awn; c, palea; d, stamens.

Plate 30. 1, *Sporobolus ciliatus* Presl. Panama. — a, Spikelet; b, spikelet in fruit; c, pistil; d, fruit. 2, *Sporobolus humilis* Presl. Island of Luzone. — a, Entire spikelet; b, same, empty glumes removed; c, fruit. 3, *Sporobolus repens* Presl. Mexico. — Natural size.— a, Empty glumes; b, flowering glume and palea; c, pistil; d, anthers.

Plate 31. *Nowodworskya agrostoides* Presl. — a, Spikelet; b, back of flowering glume.

Plate 32. 1, 2, *Agrostis caespitosa* Presl. Peru (?). — a, Empty glumes; b, flowering glume; c, rudiment. — The lower figure is drawn from a specimen collected on the Wilkes Exploring Expedition in Peru. The upper figure is drawn from Presl's specimen. 3, *Agrostis rigescens* Presl. Peru (?). — a, Empty glumes; b, flowering glume and palea. — Habit drawings, natural size.

Plate 33. *Agrostis toluccensis* HBK. High mountains of Peru. — a, Empty glumes; b, spikelet with the empty glumes removed.

Plate 34. 1, *Trichodium album* Presl. Nootka Sound. — a, Empty glumes; b, floret. 2, 3, *Trichodium nanum* Presl. Peru (?). — Natural size. — a, Spikelet; b, floret. — The lower figure is drawn from a specimen of the same species collected on the Wilkes Exploring Expedition.

Plate 35. 1, *Deyeuxia densiflora* Presl. From mountains of Peru. — a, Empty glumes; b, floret, empty glumes removed, showing palea; c, rudiment. 2, *Deyeuxia ovata* Presl. High mountains of Peru. — a, Empty glumes; b, spikelet, empty glumes removed; c, rudiment.

Plate 36. *Deyeuxia fuscata* Presl. High mountains of Peru. — a, Empty glumes; b, spikelet, empty glumes removed; c, rudiment.

Plate 37. *Deschampsia calycina* Presl. — a, Empty glumes; b, spikelet, empty glumes removed; c, palea and grain.

Plate 38. *Avena pilosa* Presl. — a, Empty glumes; b, spikelet, empty glumes removed; c, floret; d, dorsal view of flowering glume; e, palea.

Plate 39. *Monopogon avenaceus* Presl. — a, Spikelet; b, back of first glume of one flower; c, back of second glume of one flower; d, third glume and inclosed palea; e, flowering glume, front; f, flowering glume, back; g, flowering glume, inside, flattened out; h, palea, back; i, ovary and lodicules.

Plate 40. 1, *Cynodon arcuatus* Presl. Island of Luzone. — a, Empty glumes; b, spikelet, empty glumes removed. 2, *Cynodon tener* Presl. Luzone. — a, Empty glumes; b, floret and rudiment.

Plate 41. *Chloris truncata* R. Br. — a, Empty glumes; b, spikelet, with the empty glumes removed; c, palea.

Plate 42. *Campulosus planifolius* Presl. Mexico. — a, Outer or empty glumes; b, spikelet, empty glumes removed, and floret expanded.

Plate 43. 1, *Diplachne brevifolia* Presl. High mountains of Peru, — a, Empty glumes; b, spikelet, empty glumes removed. 2, *Diplachne rigescens* Presl. — a, Emply glumes; b, spikelet, empty glumes removed.

Plate 44. 1, *Eragrostis alba* Presl. Monterey, Cal. Specimen incomplete. — a, Empty glumes; b, spikelet, empty glumes removed. 2, *Eragrostis tenella* Beauv. — a, Spikelet; b, empty glume of the floret.

Plate 45. *Eragrostis lurida* Presl. Mountains of Peru. — a, Empty glumes; b, spikelet, empty glumes removed; c, dorsal view of flowering glumes; d, palea; e, grain.

Plate 46. *Eragrostis secundiflora* Presl. Mexico. — a, Spikelet; b, floret; c, inner view of the palea showing lodicules.

Plate 47. 1, *Eragrostis panamensis* Presl. Panama. — a, Spikelet; b, floret. 2, *Megastachya panicoides.* Presl. Mexico near Acapulco. — a, empty glumes; b, spikelet, empty glumes removed; c, floret.

Plate 48. 1, *Brizopyrum boreale* Presl. Nootka Sound. Specimen fragmentary. 2, *Brizopyrum pilosum* Presl. Acapulco. — a, Spikelet.

Plate 49. *Chascolytrum spicigerum* Presl. Mountains of Peru and Chili. — a, Entire spikelet; b, lateral view of flowering glume; c, palea; d, lodicules; e, pistil.

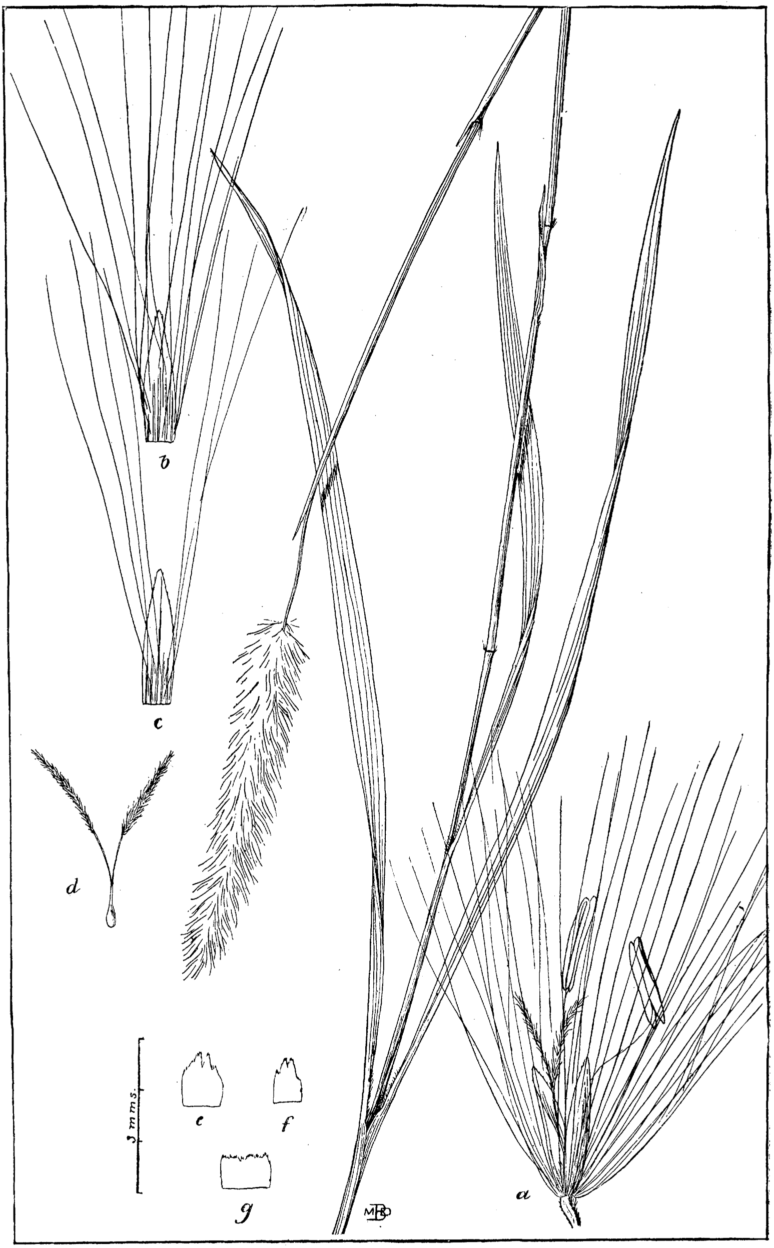
Plate 50. *Poa holciformis* Presl. — a, Empty glumes; b, spikelet, empty glumes removed; c, floret; d, palea; e, lodicules; f, pistil.

Plate 51. 1, *Poa nootkaensis* Presl. Nootka Sound (?), Mexico (?). — a, Empty glumes; b, spikelet, empty glumes removed. 2, *Poa secunda* Presl. Chilian Cordilleras. Fragmentary specimen. — a, Empty glumes; b, spikelet, empty glumes removed; c, dorsal view of flowering glume; d, palea; e, pistil and lodicules.

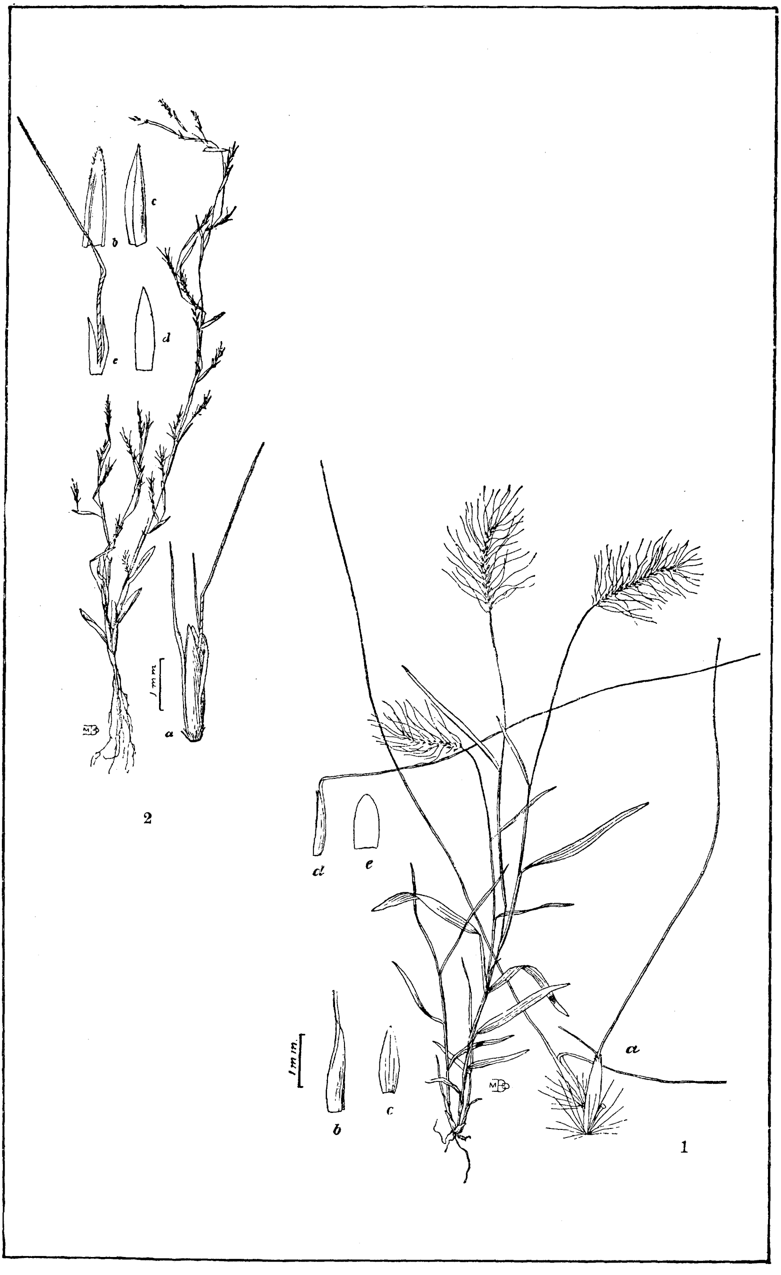
Plate 52. 1, *Bromus setifolius* Presl. In the Chilian Cordilleras. — a, Empty glumes; b, a single floret. 2, *Bromus secundus* Presl. Nootka Sound. — a, Empty glumes; b, florets.

Plate 53. *Bromus virgatus* Presl. Mexico (?). Monterey, Cal. — a, Empty glumes; b, spikelet, empty glumes removed.

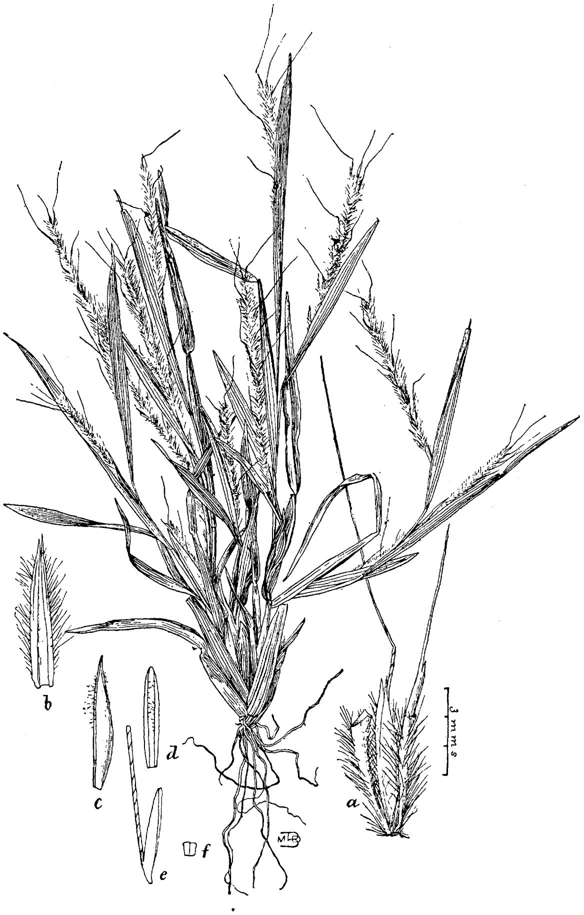
Plate 54. 1, *Ceratochloa haenkeana* Presl. Chilian Cordilleras, Mountains of Peru. — a, Lateral view of flowering glume. 2, *Hordeum comosum* Presl. Peru. — a, Interior view of group of spikelets, tip of awns removed.



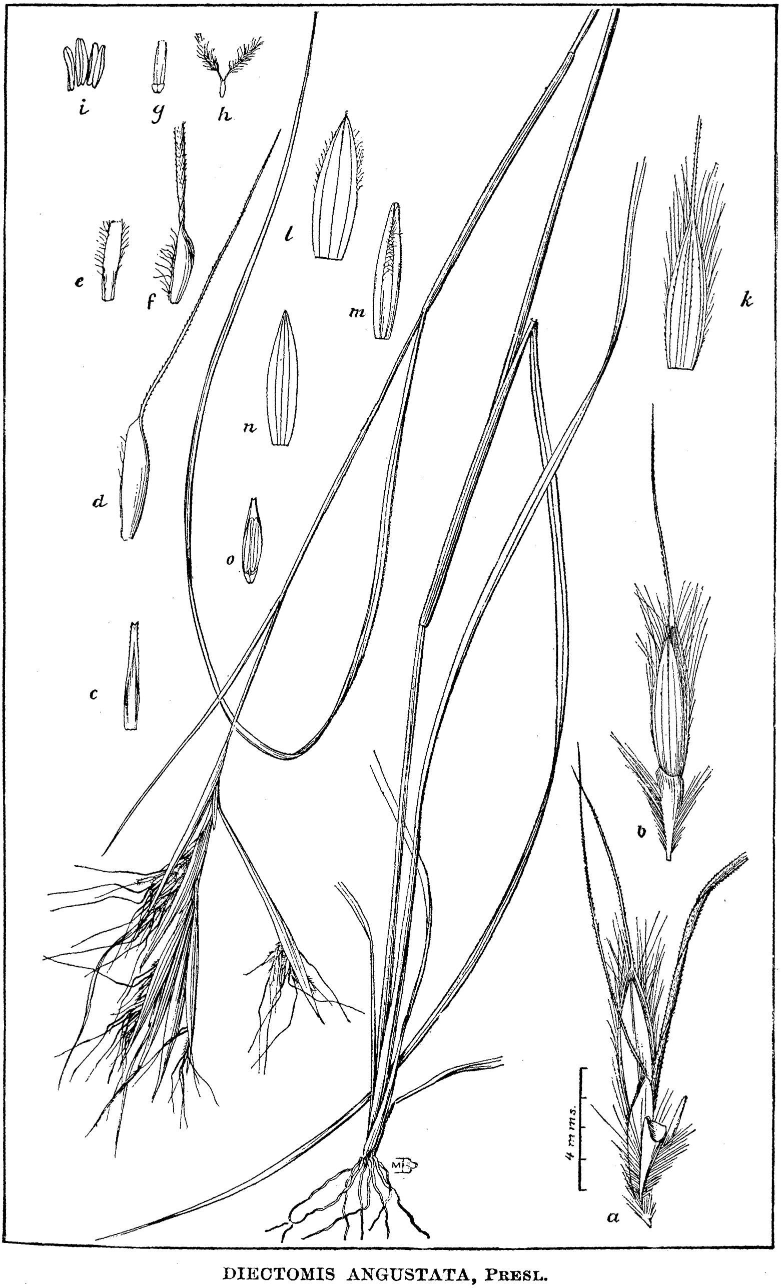
SACCHARUM SPICATUM, PRESL.



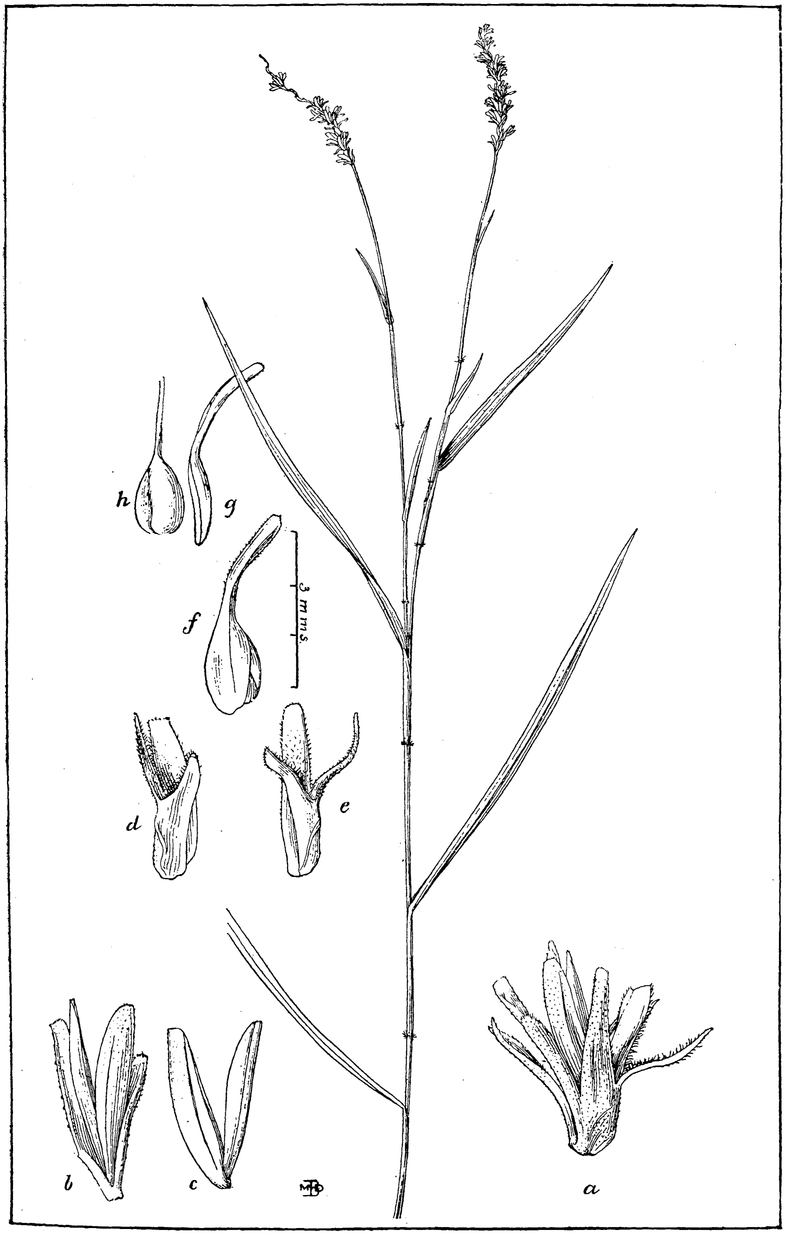
POGONOPSIS TENERA, Presl (1). ANDROPOGON TENELLUS, Presl (2).



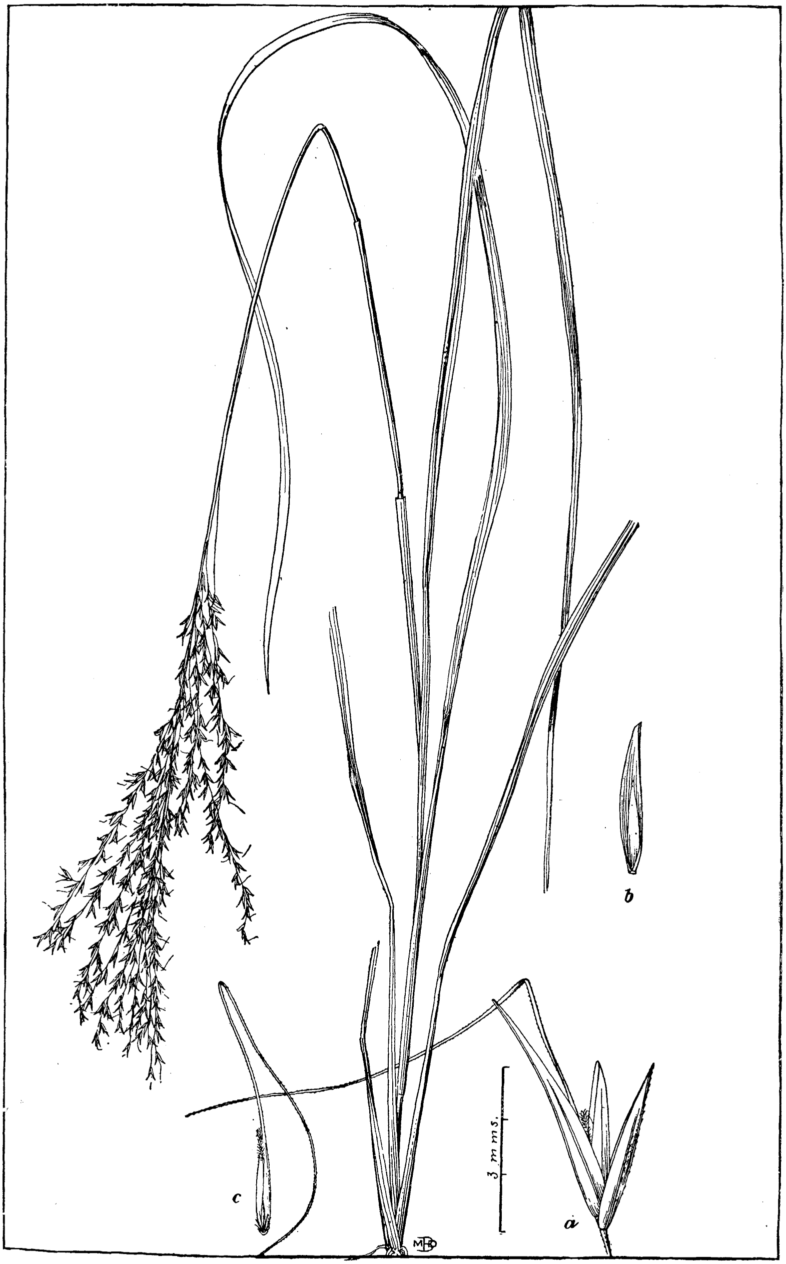
ANDROPOGON MALACOSTACHYUS, PRESL.



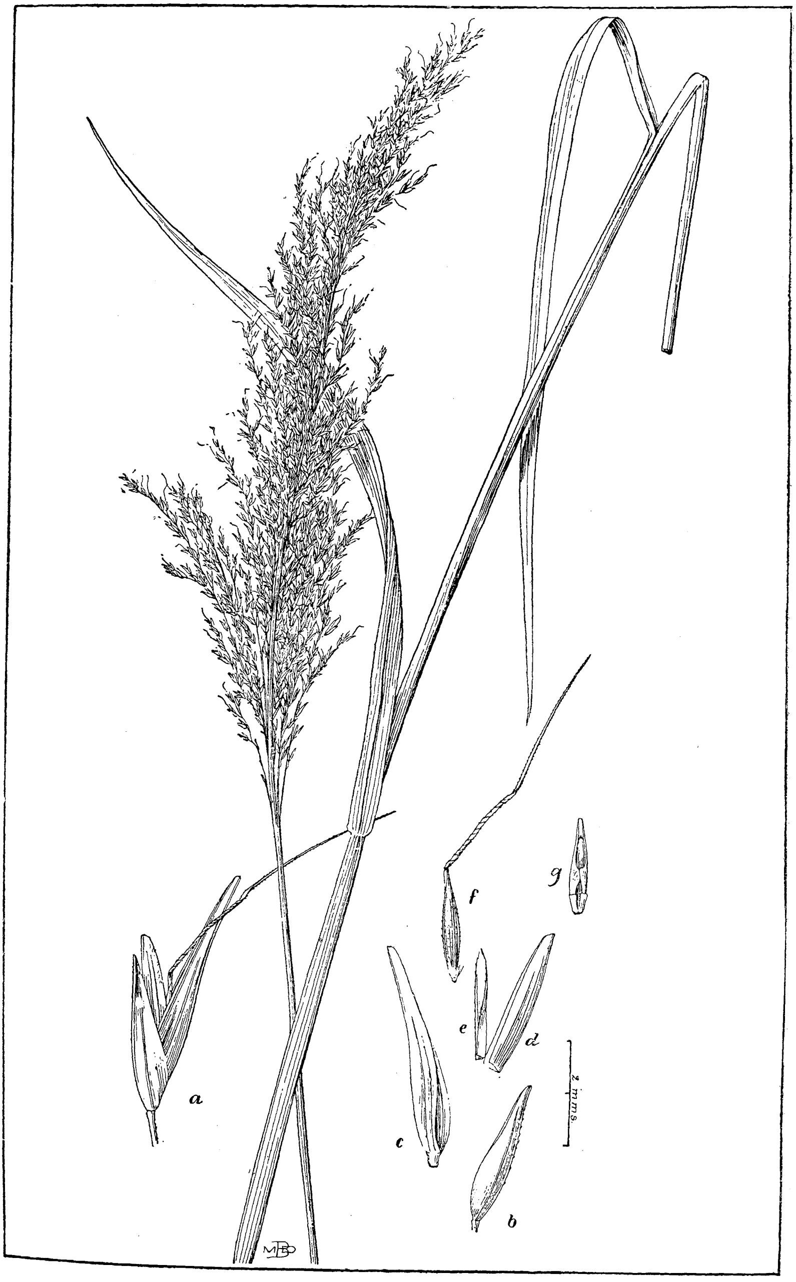
DIECTOMIS ANGUSTATA, PRESL.



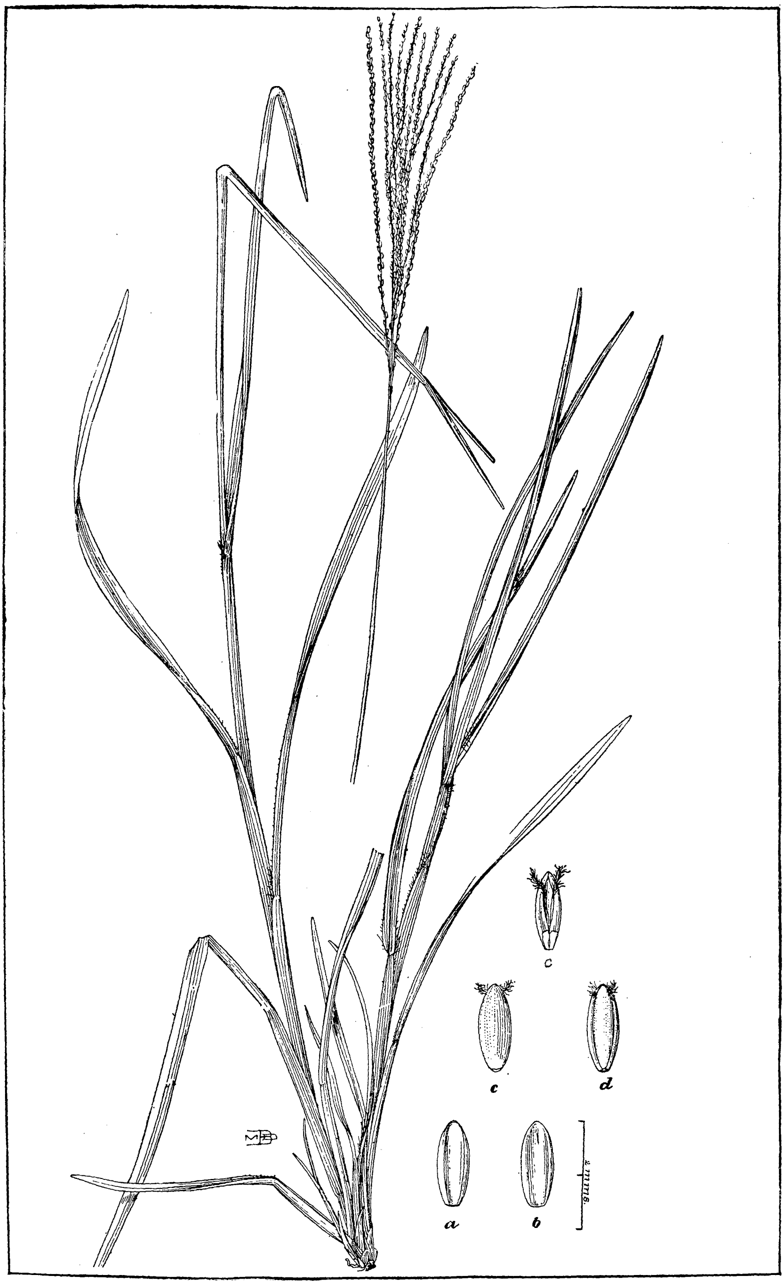
HEXARRHENA CENCHROIDES, PRESL.



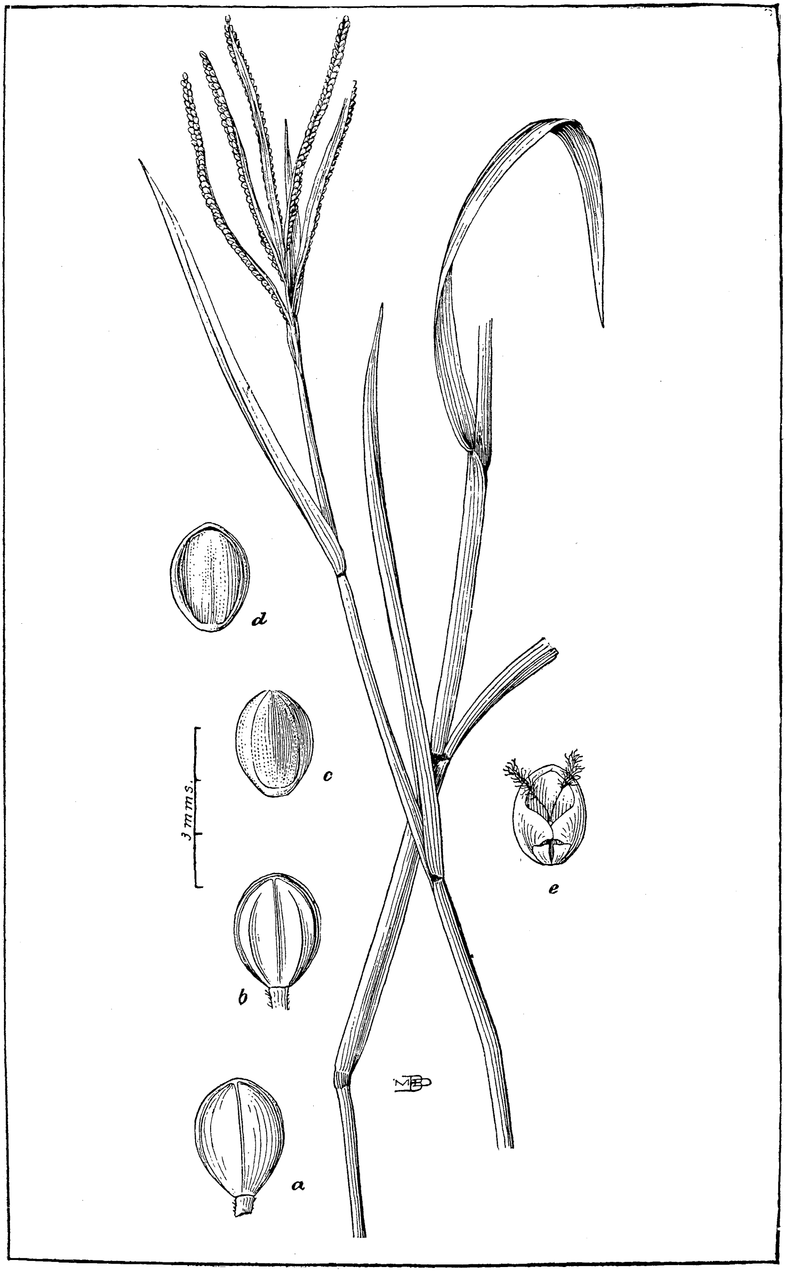
THYSANACHNE PERUVIANA, PRESL.



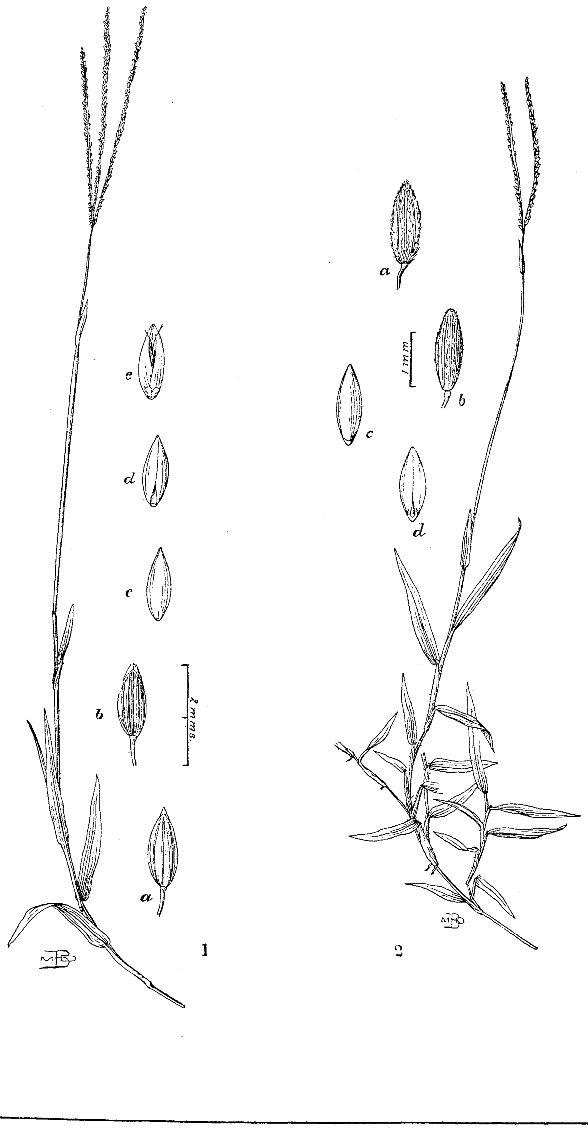
THYSANACHNE SCOPARIA, PRESL.



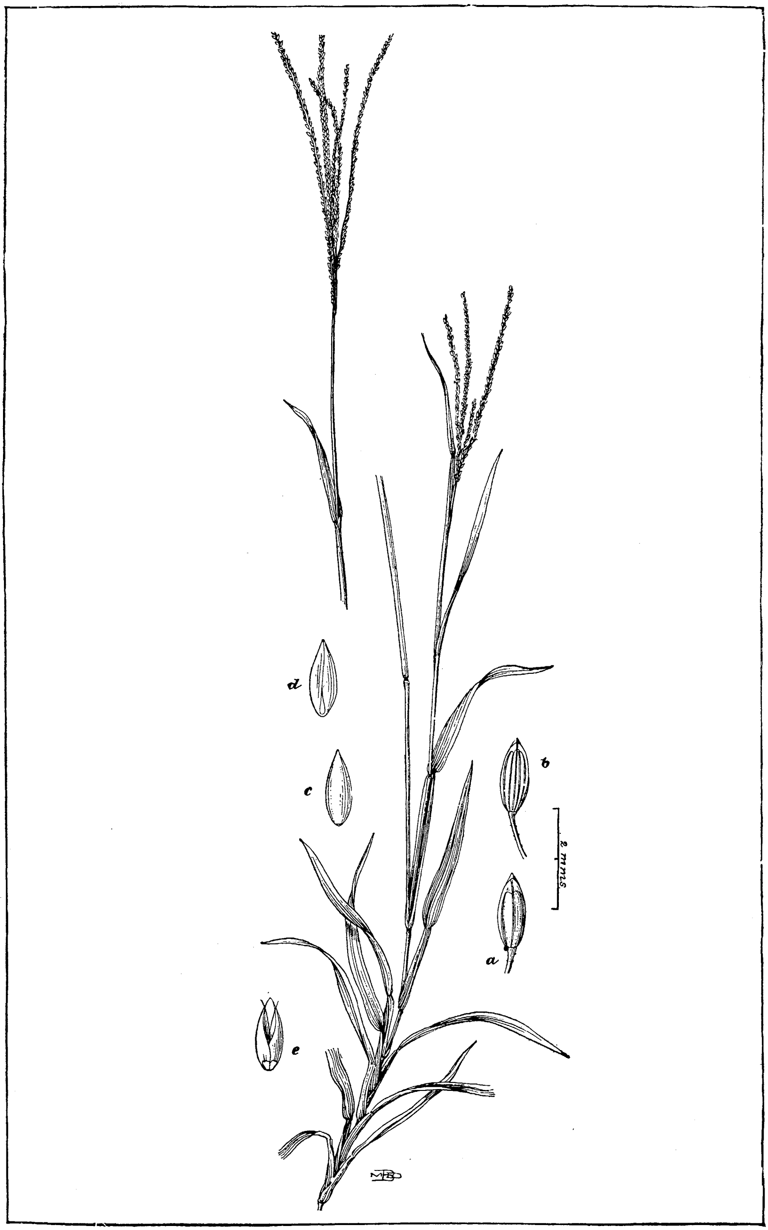
PASPALUM ATTENUATUM, PRESL.



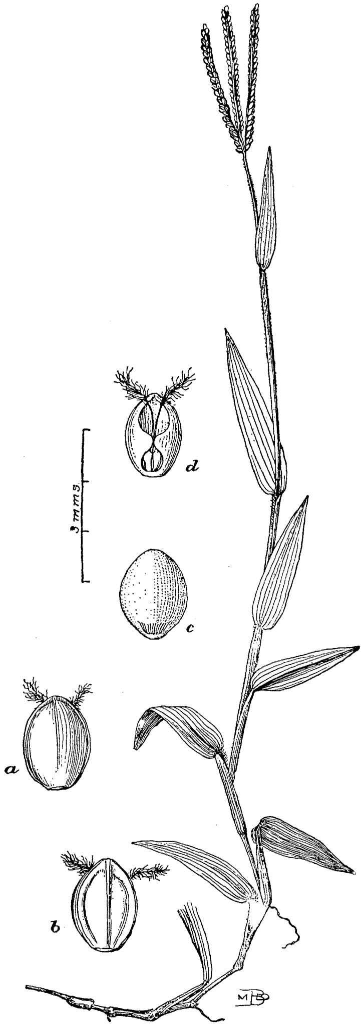
PASPALUM BRACTEATUM, Presl.



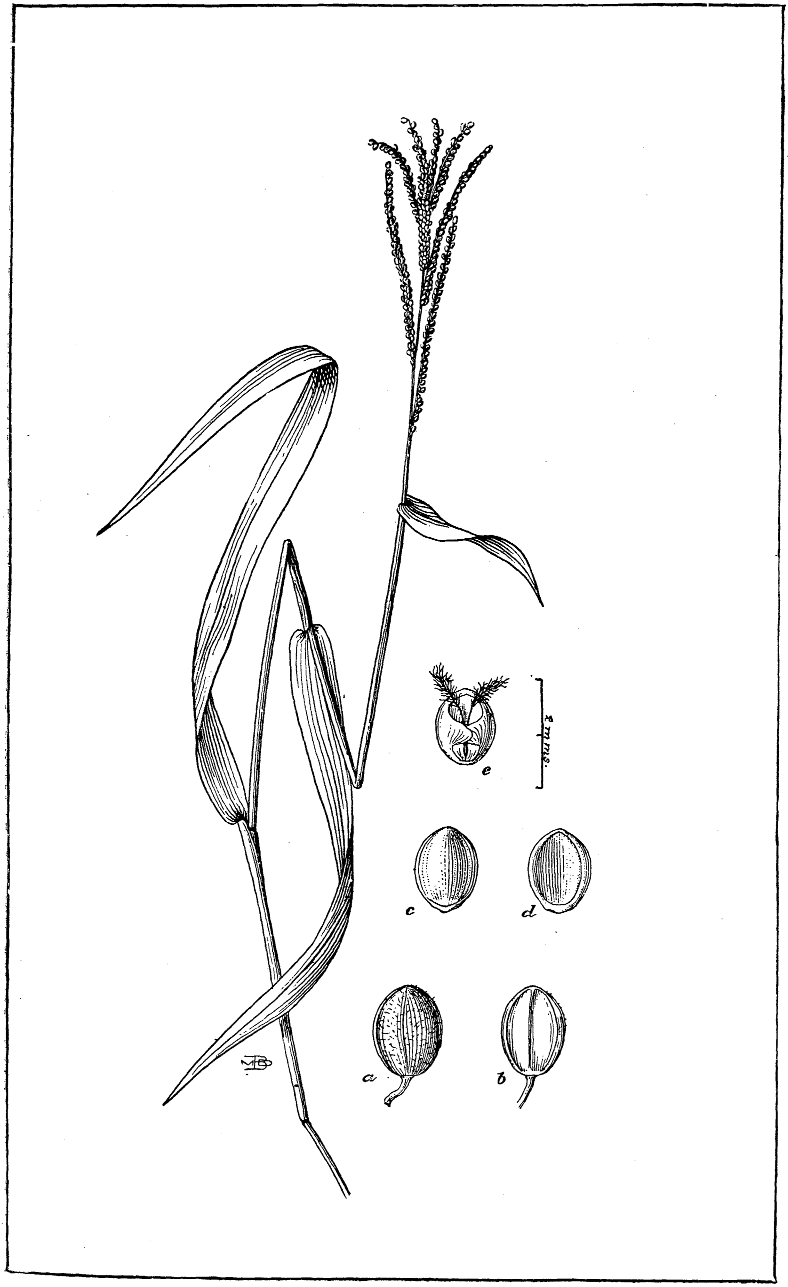
PASPALUM FUSCESCENS, PRESL (1). P. PUBESCENS, PRESL (2).



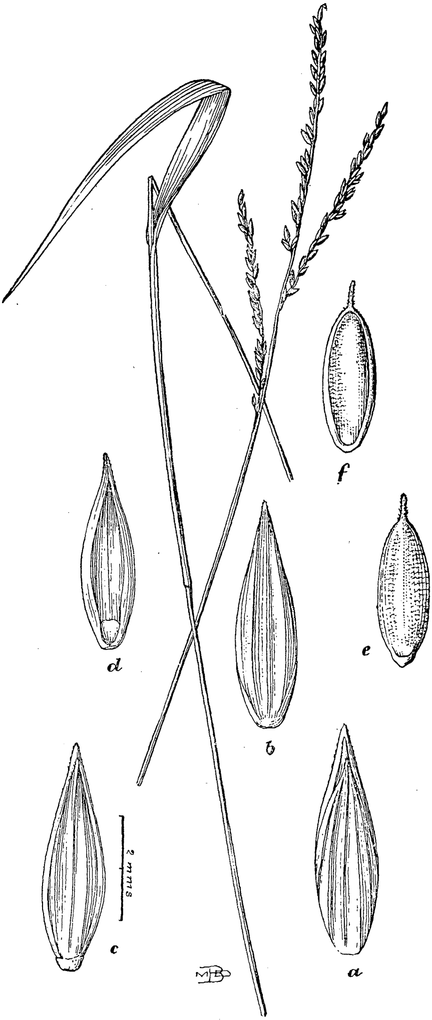
PASPALUM FUSCUM, PRESL.



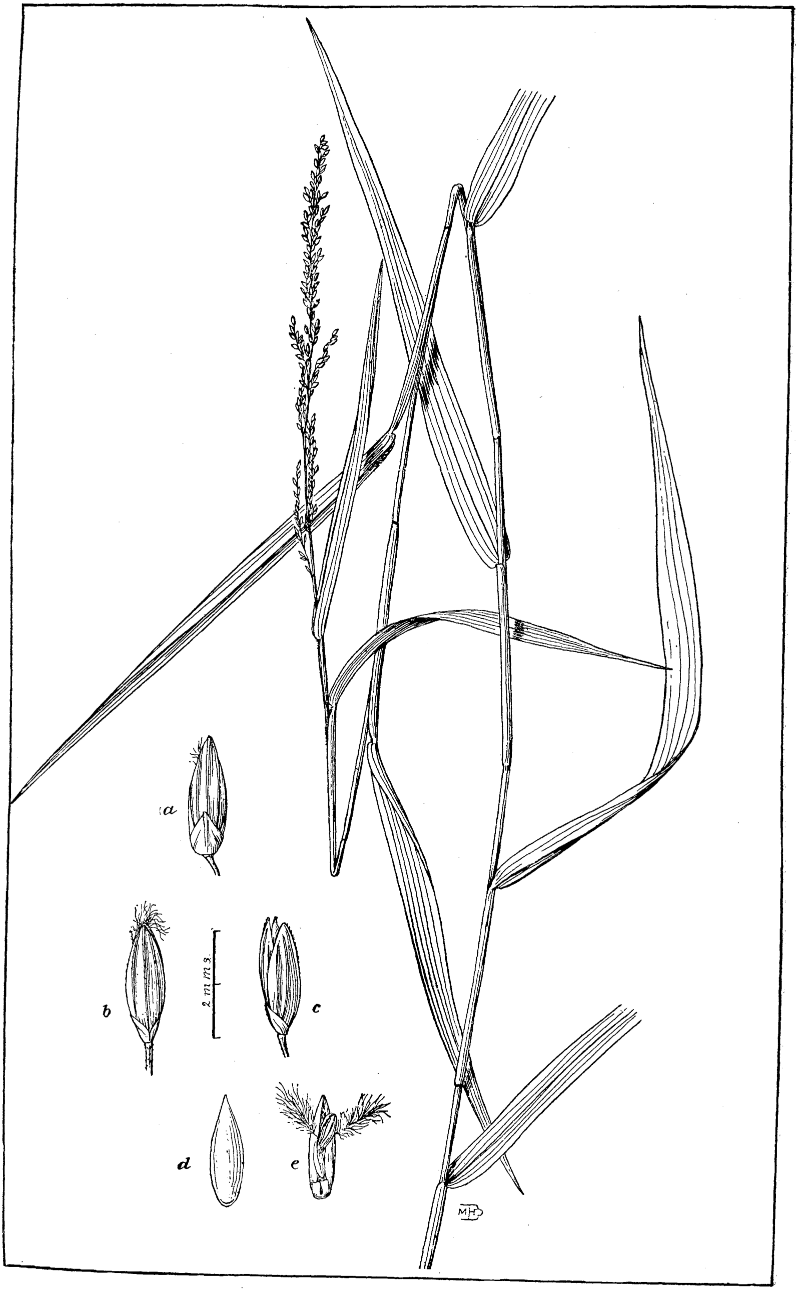
PASPALUM HAENKEANUM, PRESL.



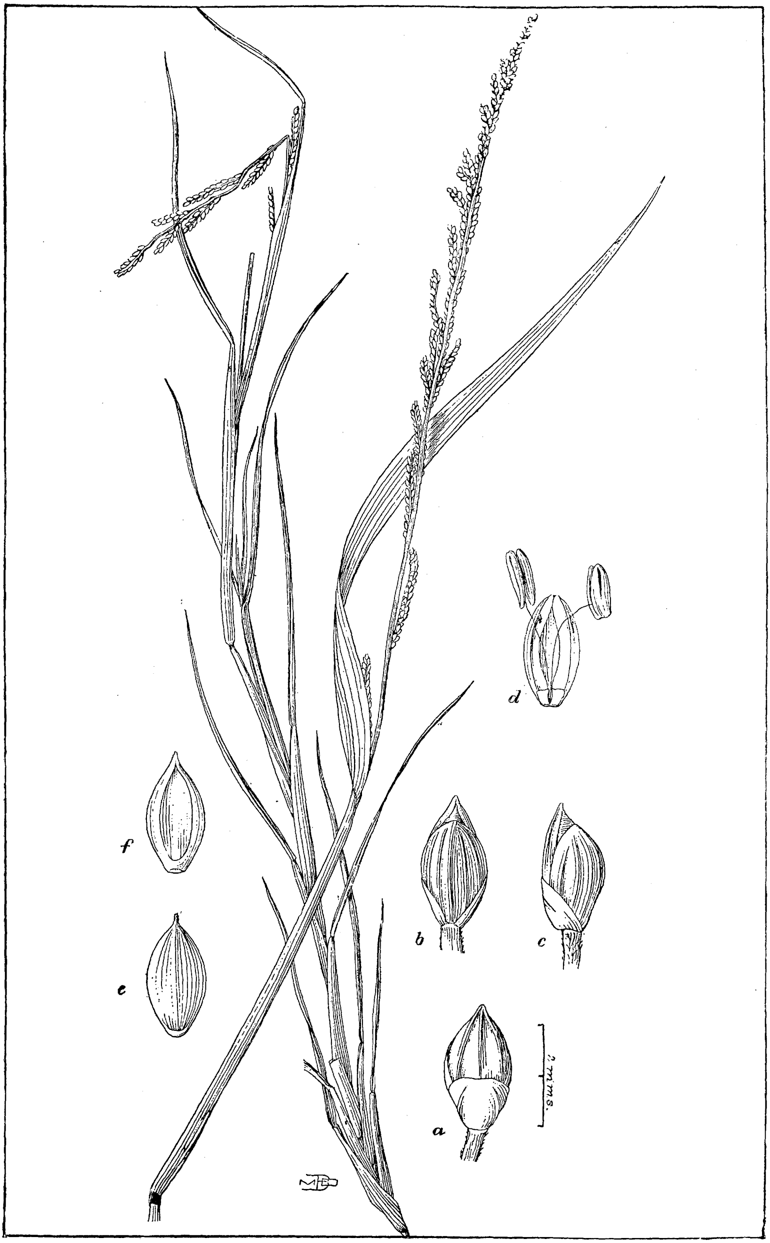
PASPALUM LENTIGINOSUM, PRESL.



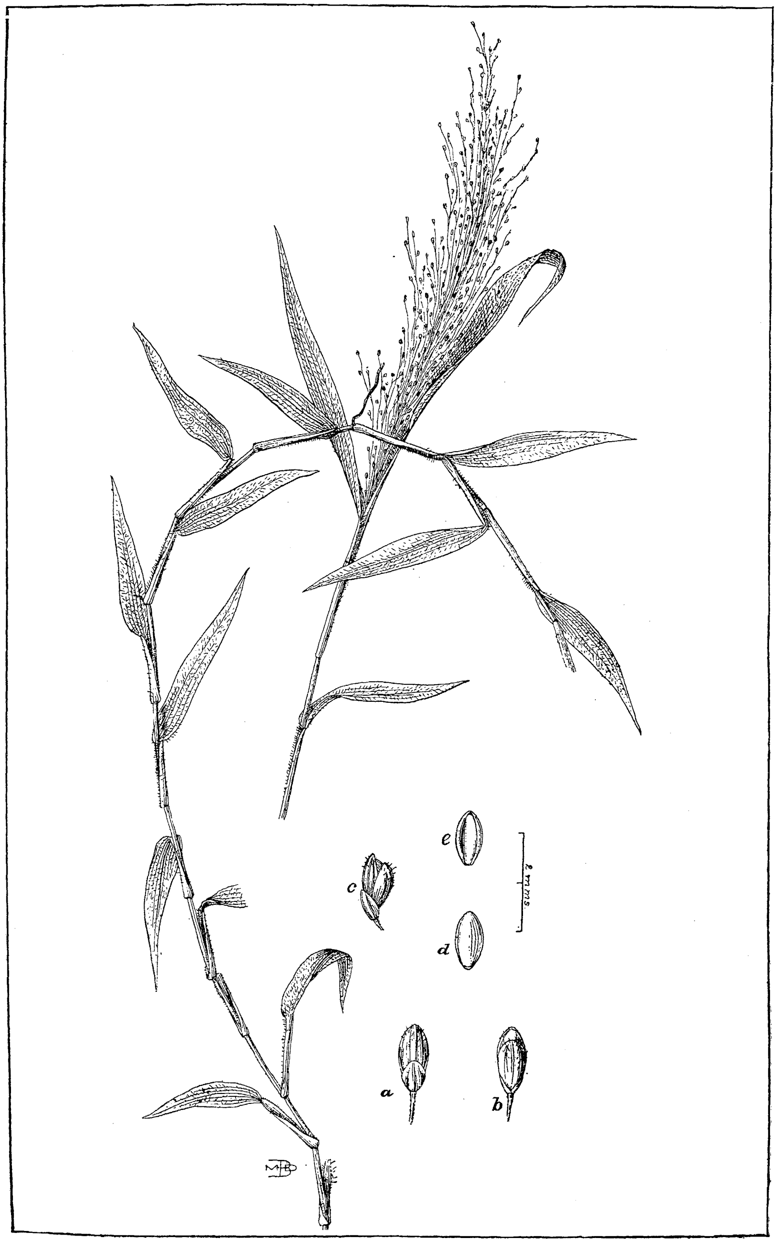
UROCHLOA PASPALOIDES, PRESL.



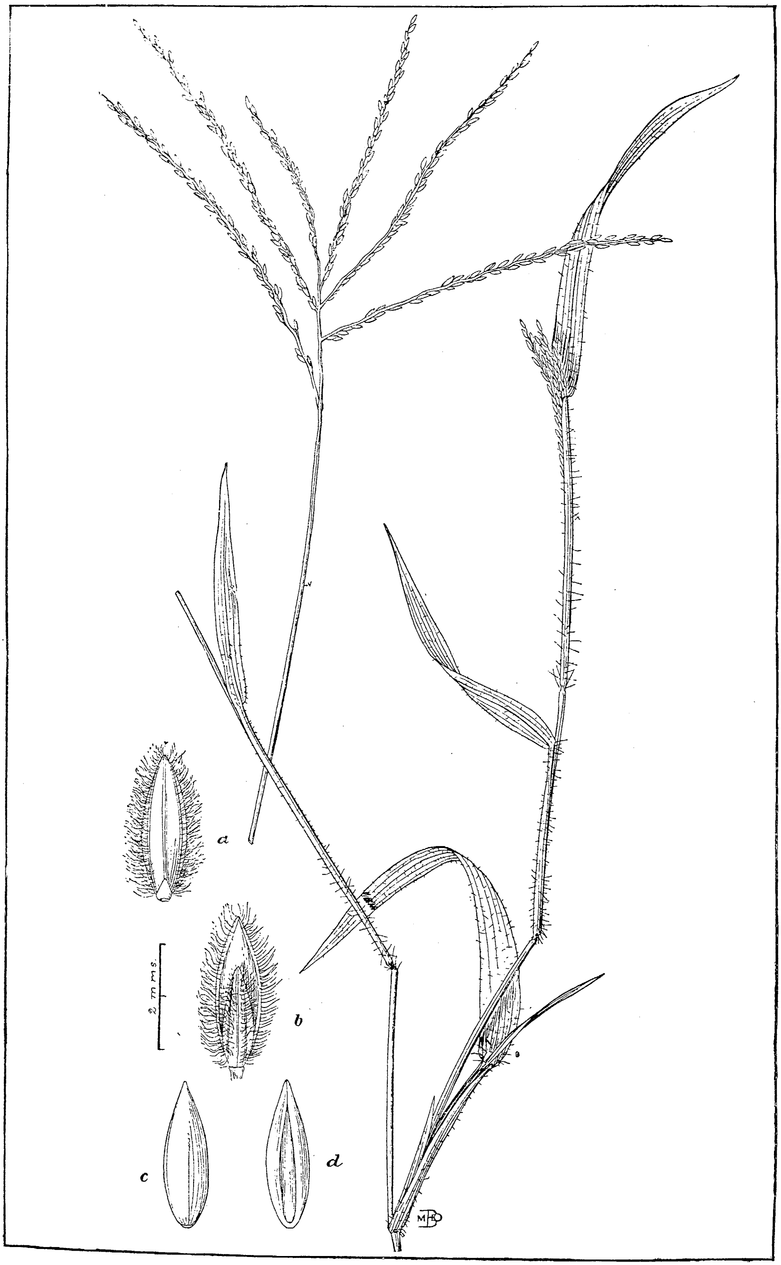
PANICUM AURITUM, PRESL.



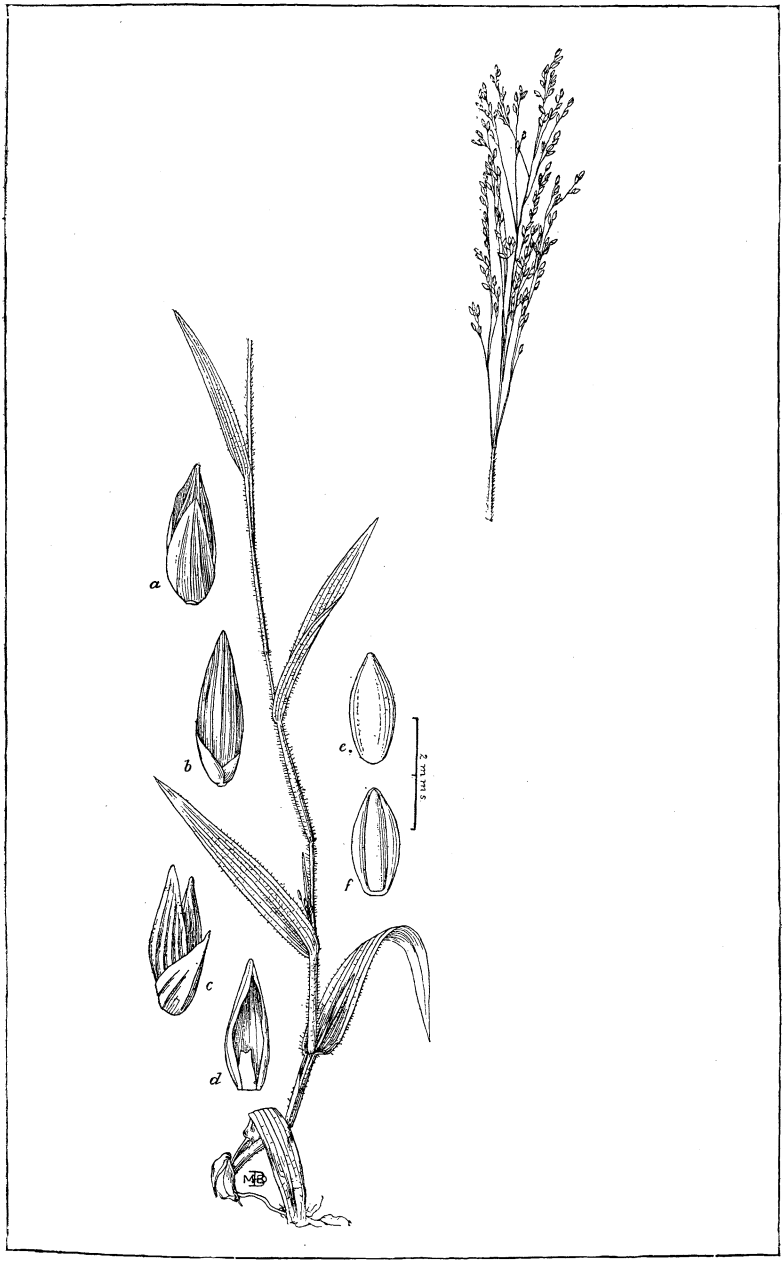
PANICUM BRIZAEFORME, PRESL.



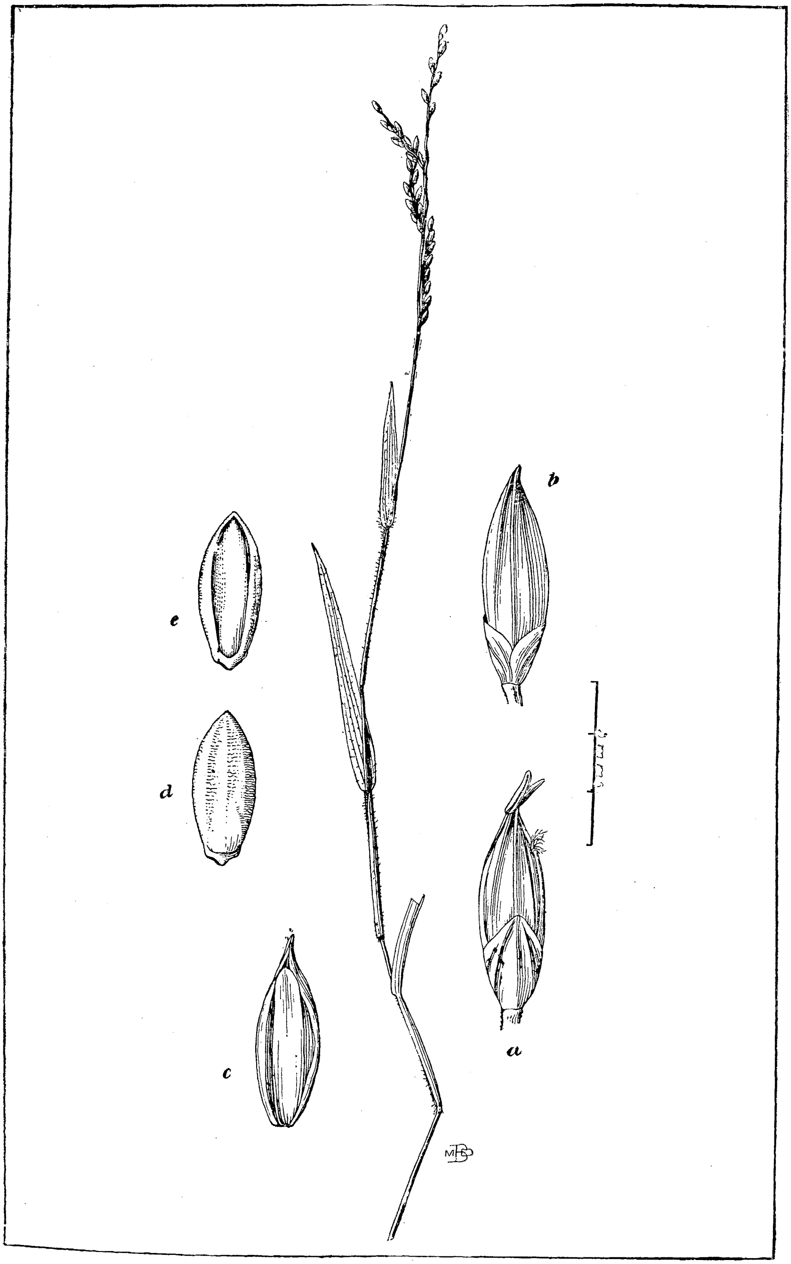
PANICUM CARINATUM, PRESL.



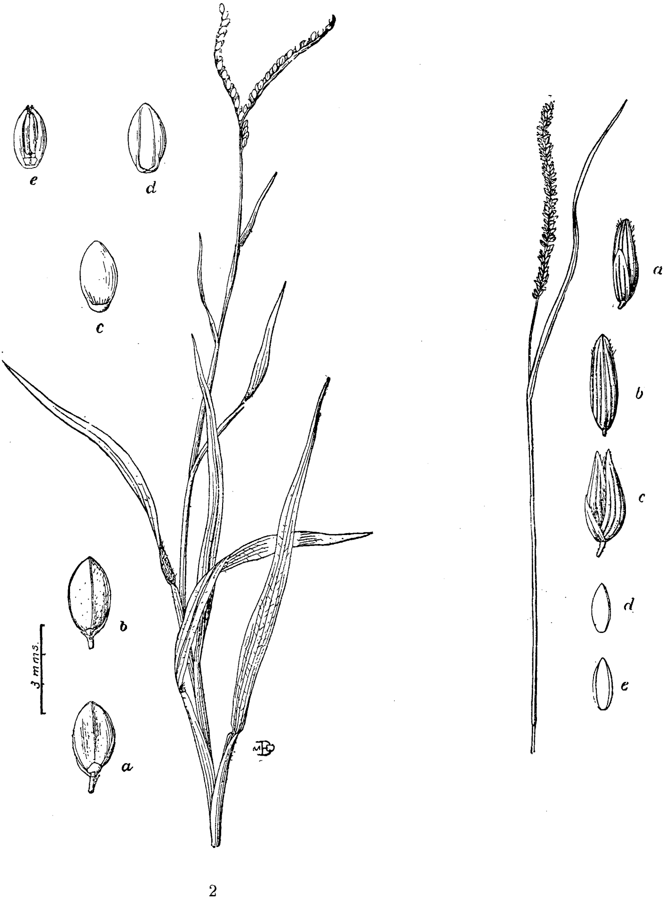
PANICUM FIMBRIATUM, PRESL.



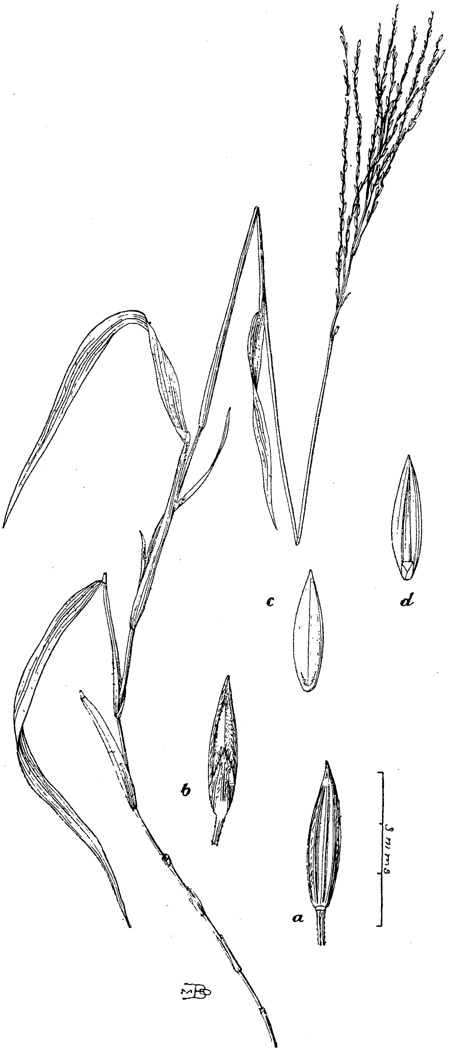
PANICUM HIRTICAULUM, PRESL.



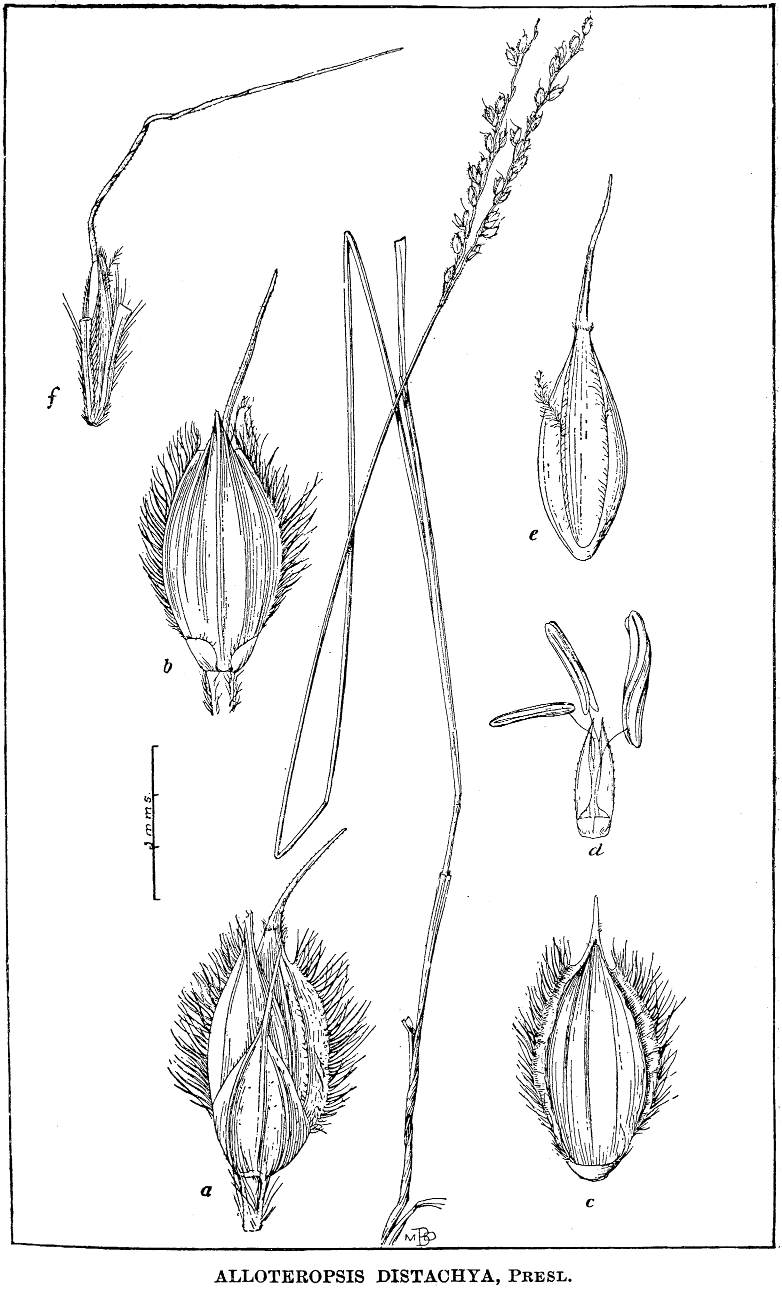
PANICUM MILIIFORME, PRESL.



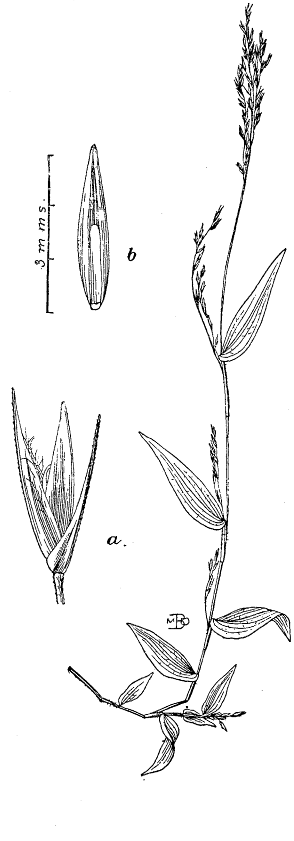
PANICUM PHLEIFORME, PRESL (1). P. POLYRRHIZUM, PRESL (2).



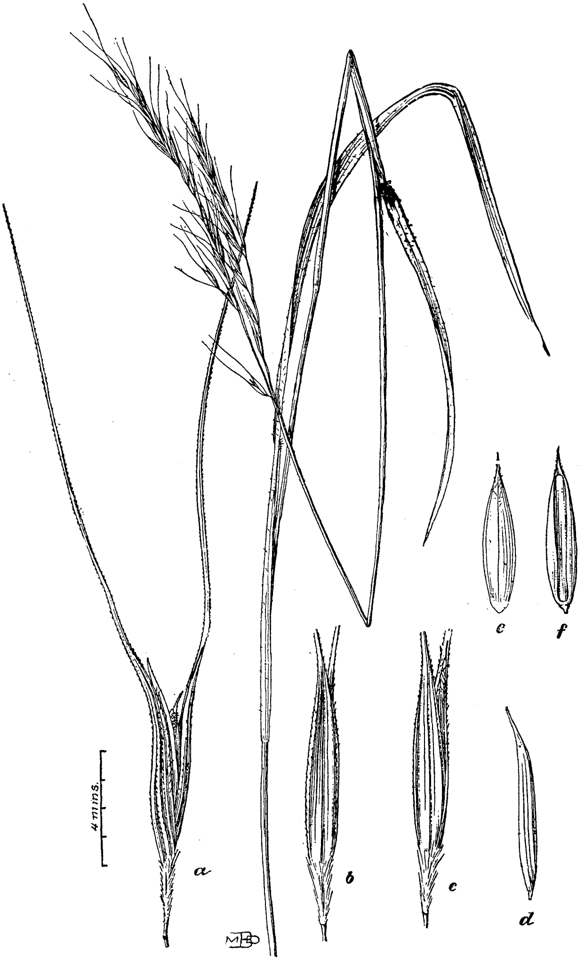
PANICUM STIPATUM, PRESL.



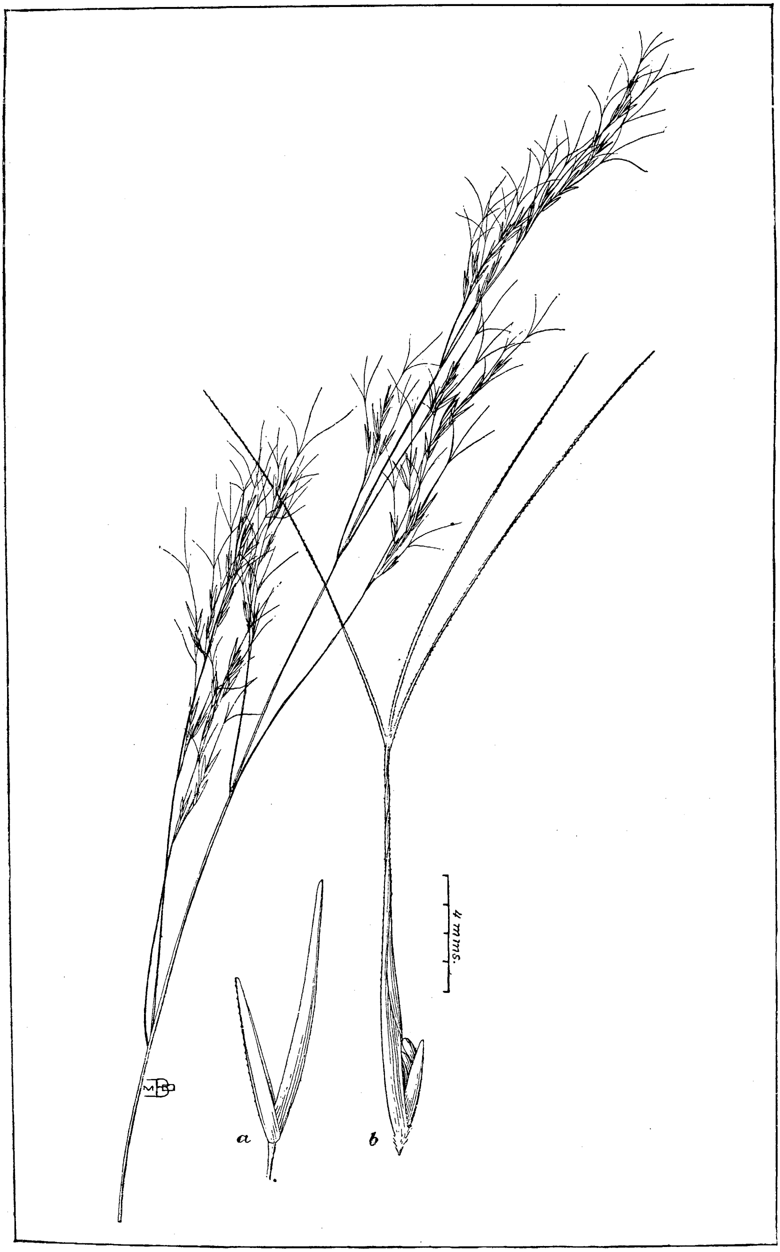
ALLOTEROPSIS DISTACHYA, PRESL.



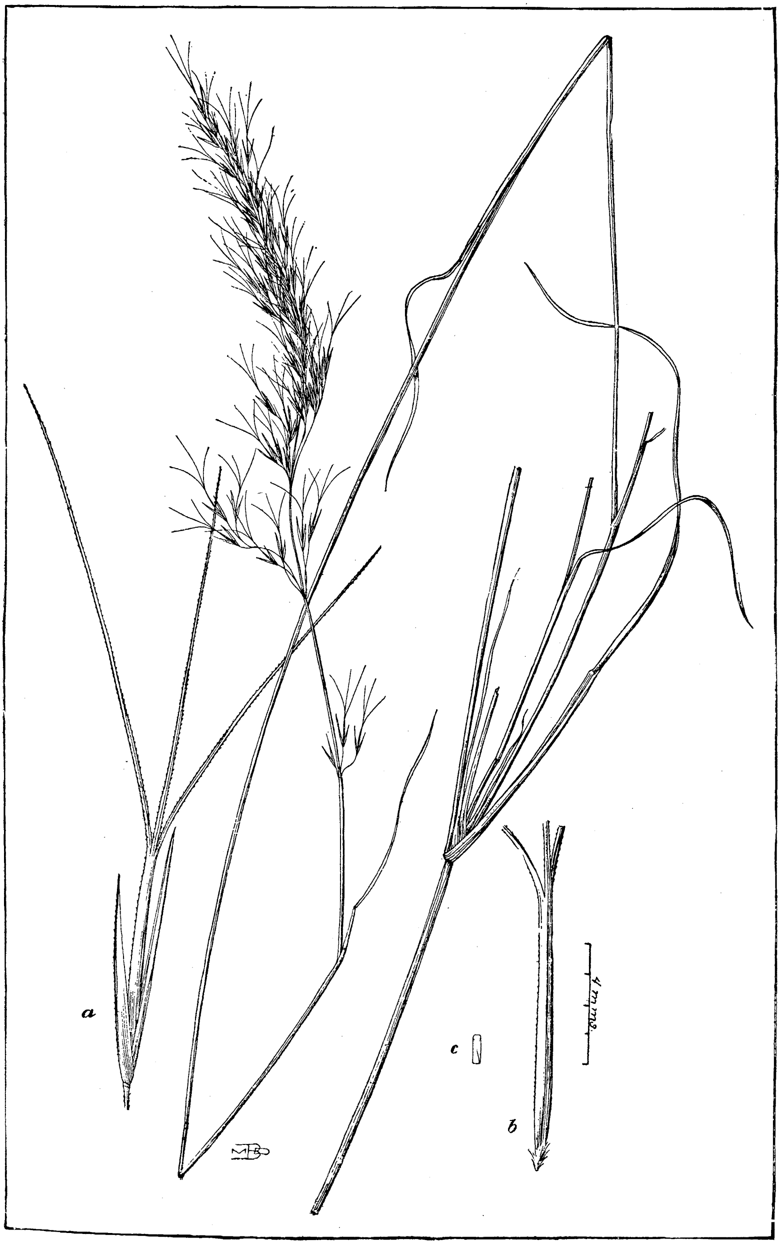
OPLISMENUS TENUIS, PRESL.



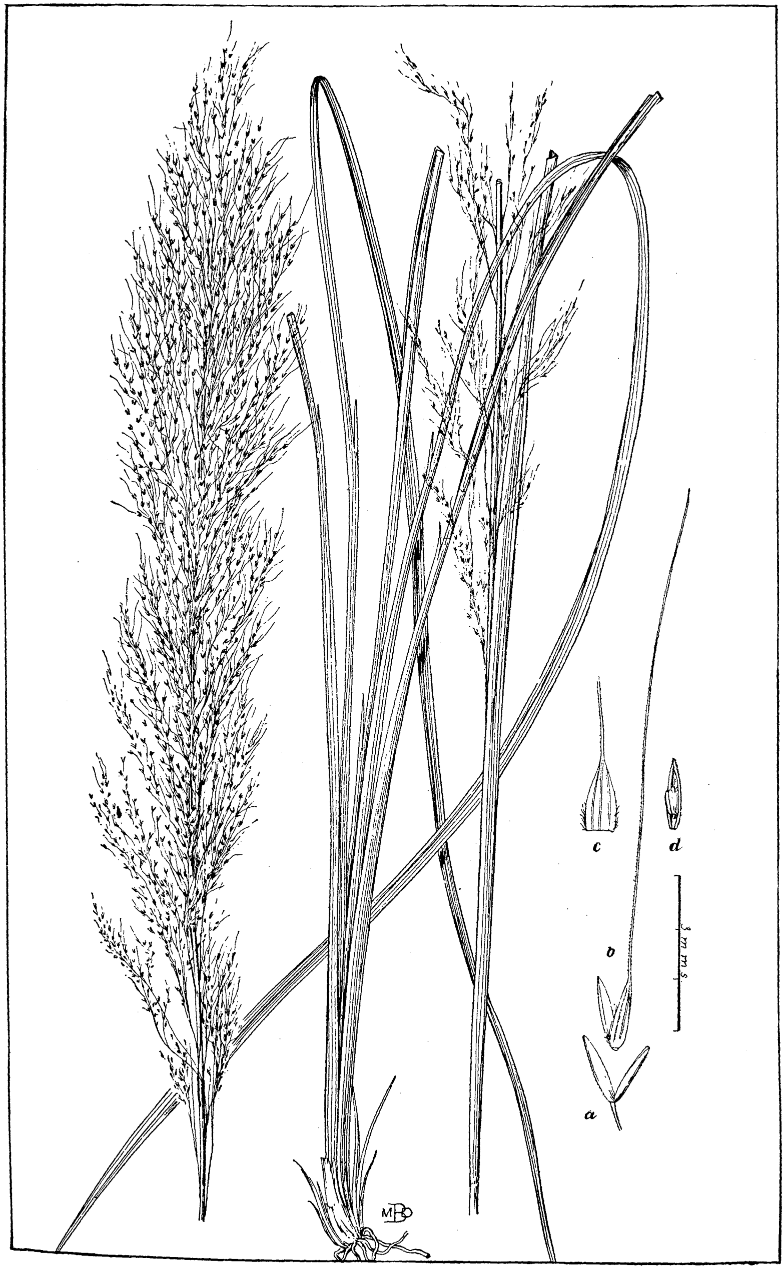
BERCHTOLDIA BROMOIDES, PRESL.



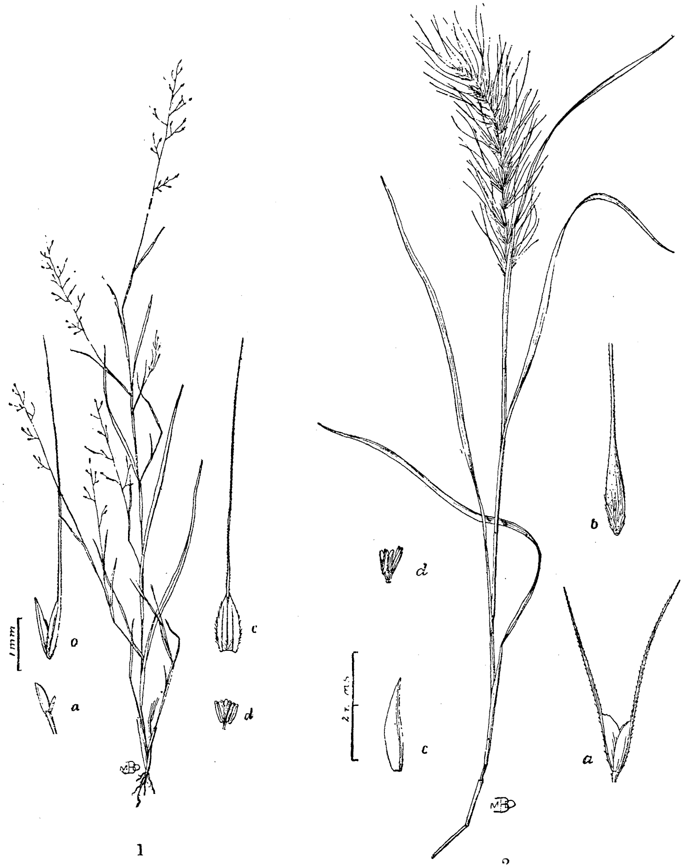
ARISTIDA LONGIRAMEA, Presl.



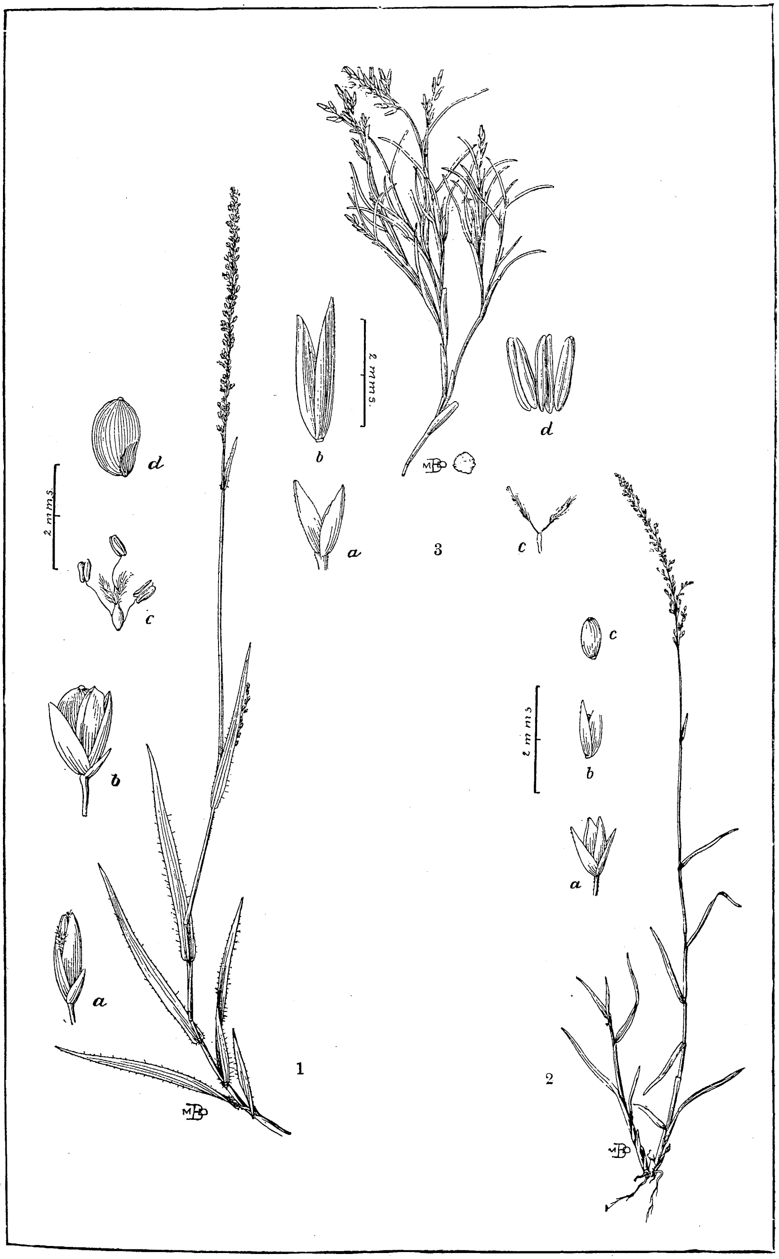
ARISTIDA NIGRESCENS, PRESL.



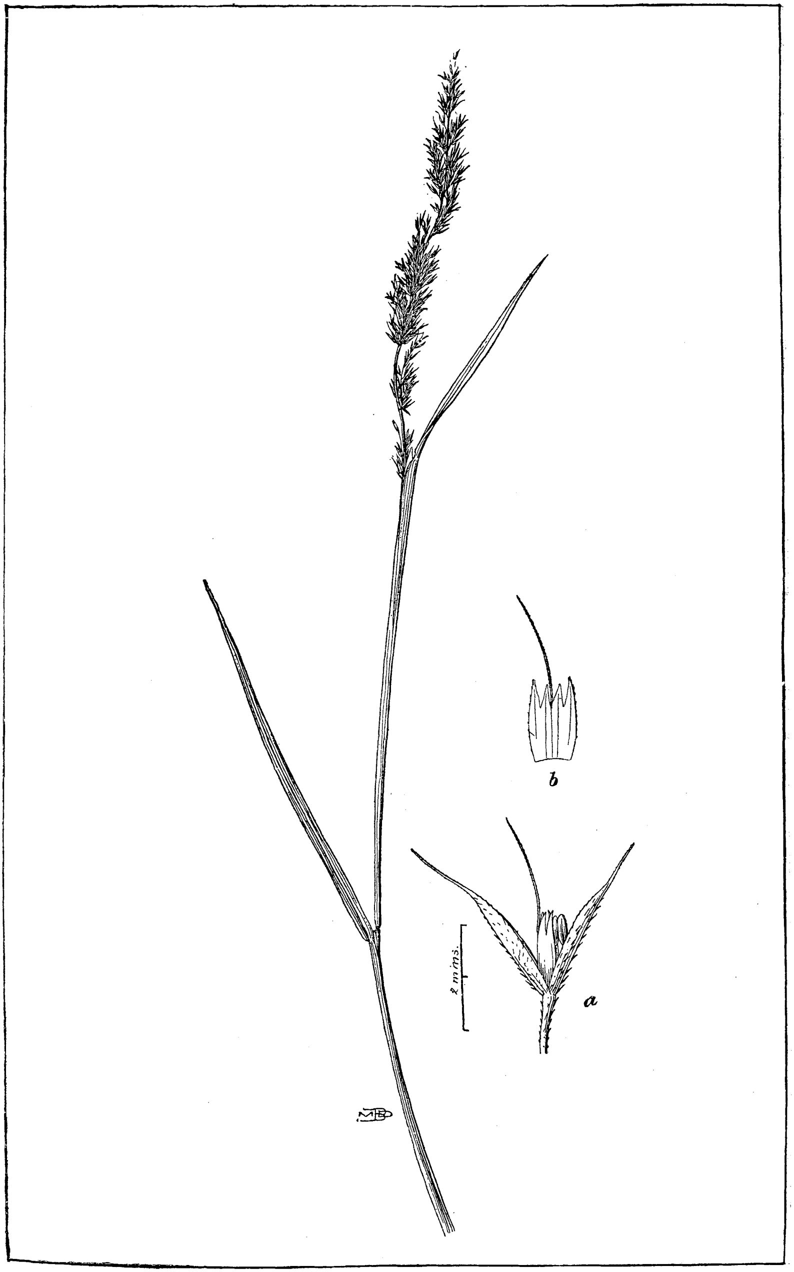
PODOSAEMUM DISTICHOPHYLLUM, PRESL.



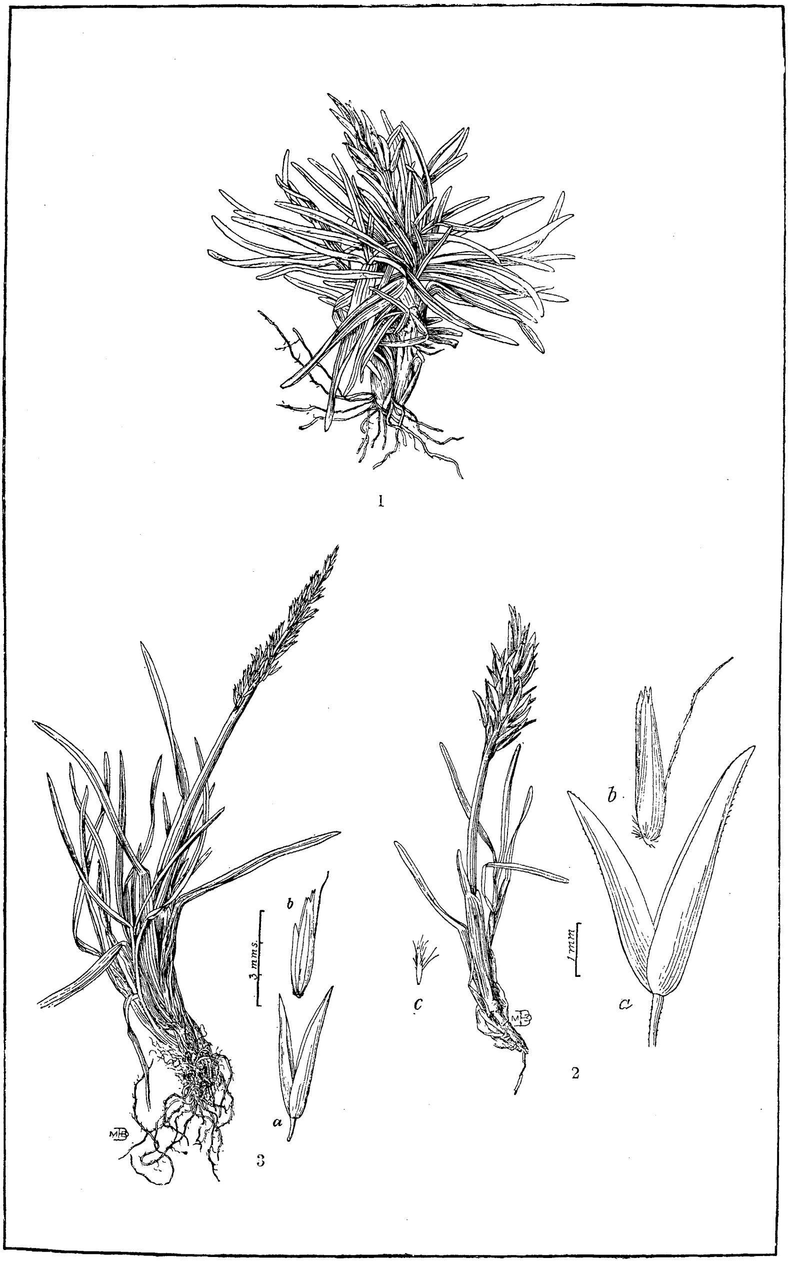
PODOSAEMUM TENUISSIMUM, PRESL (1). PEREILEMA CRINITUM, PRESL (2).



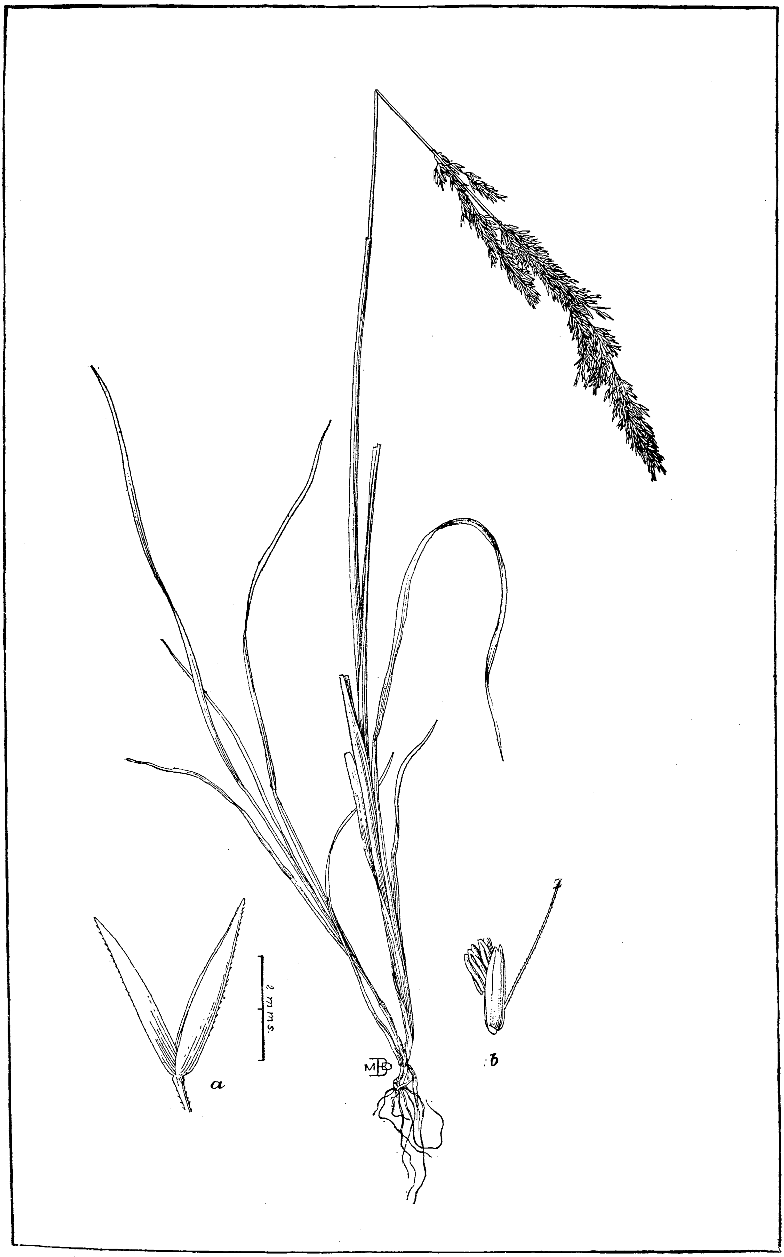
SPOROBOLUS CILIATUS, PRESL (1). S. HUMILIS, PRESL (2).
S. REPENS, PRESL (3).



NOWODWORSKYA AGROSTOIDES, PRESL.

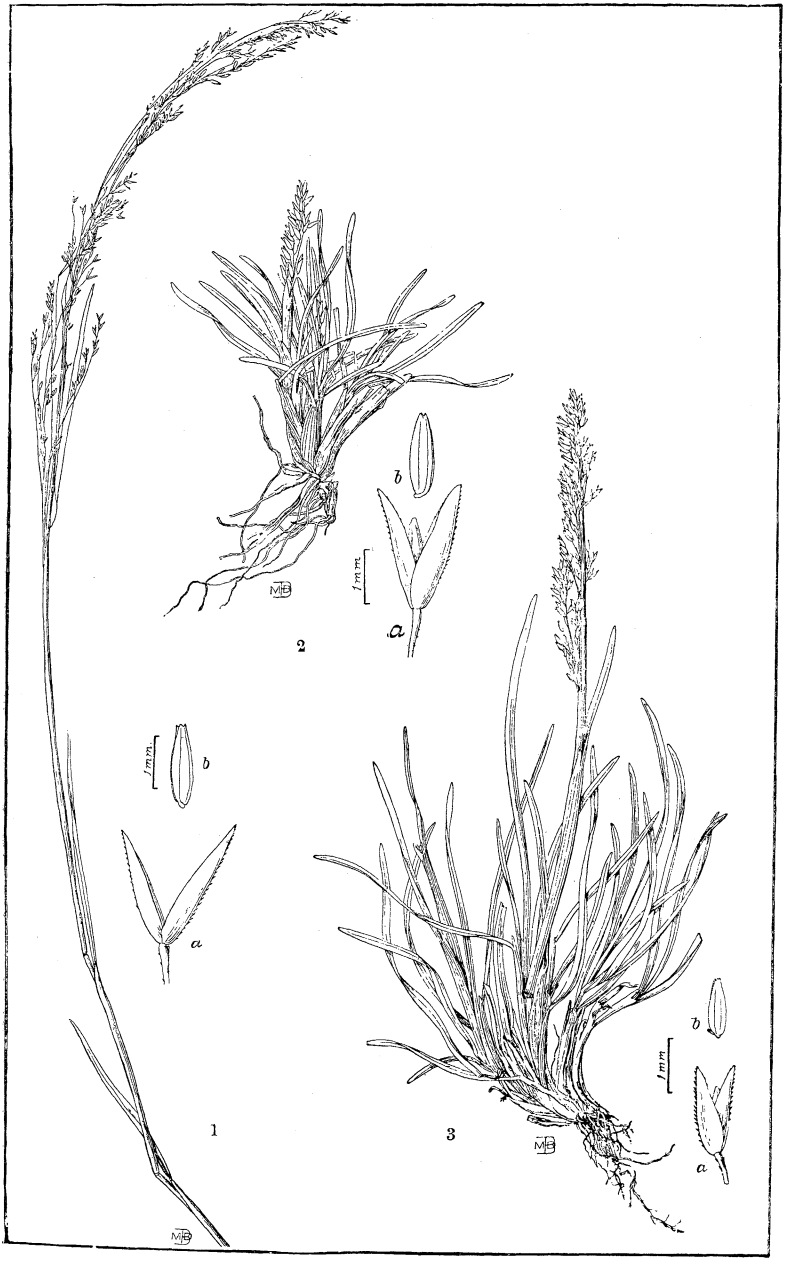


AGROSTIS CAESPITOSA, PRESL (1, 2). A. RIGESCENS, PRESL (3).

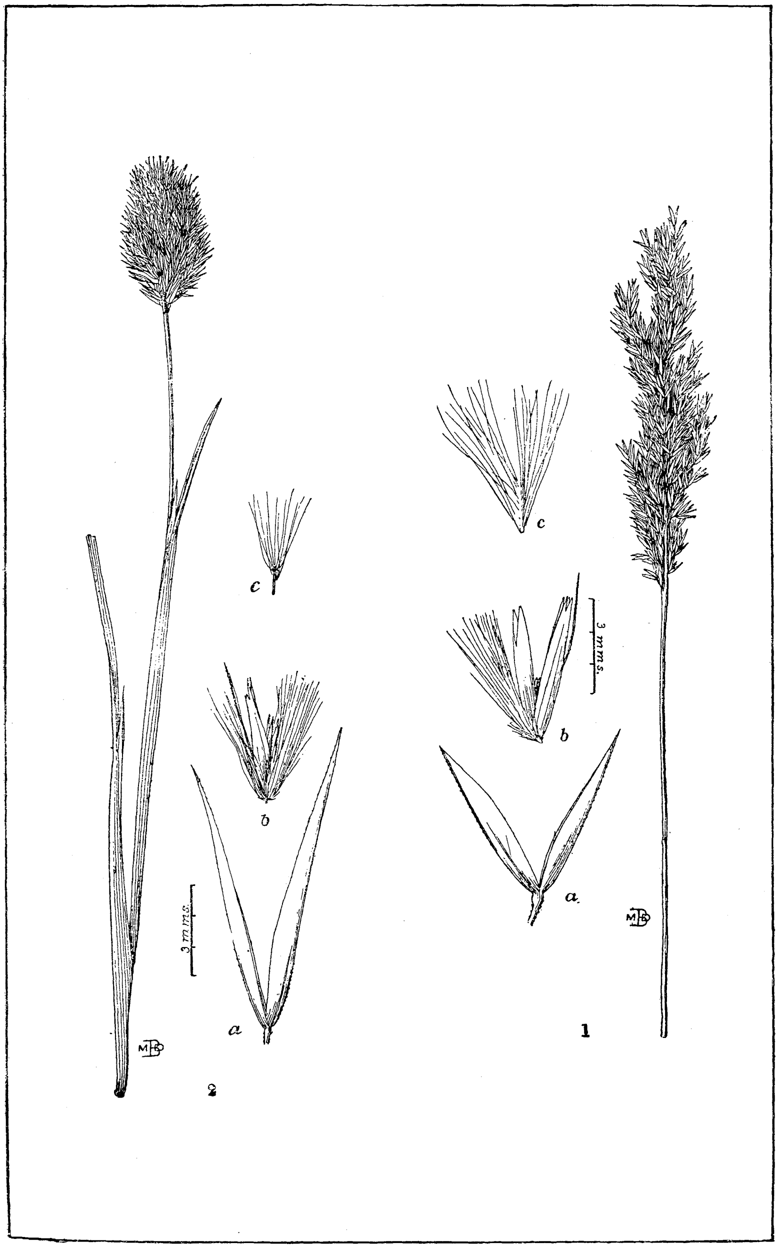


AGROSTIS TOLUCCENSIS, HBK.

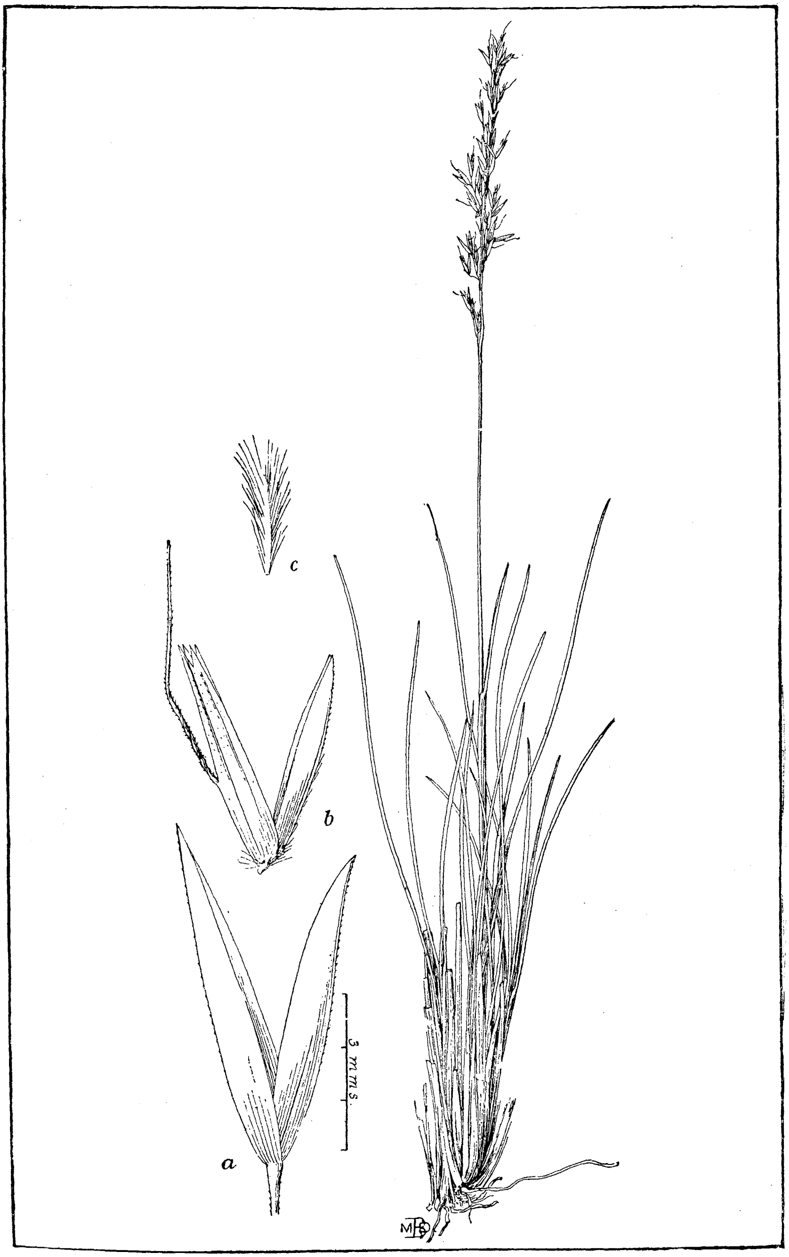
PLATE 34.



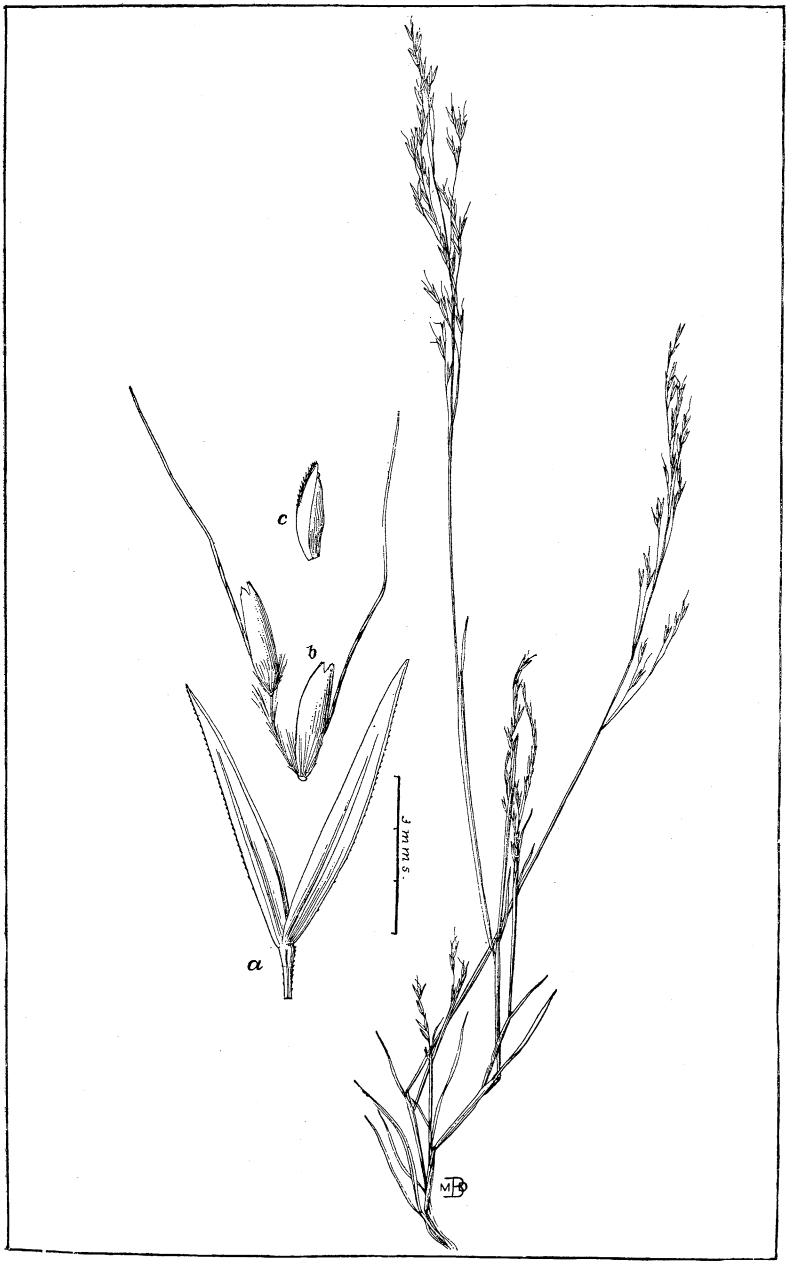
TRICHODIUM ALBUM, PRESL (1). T. NANUM, PRESL (2, 3).



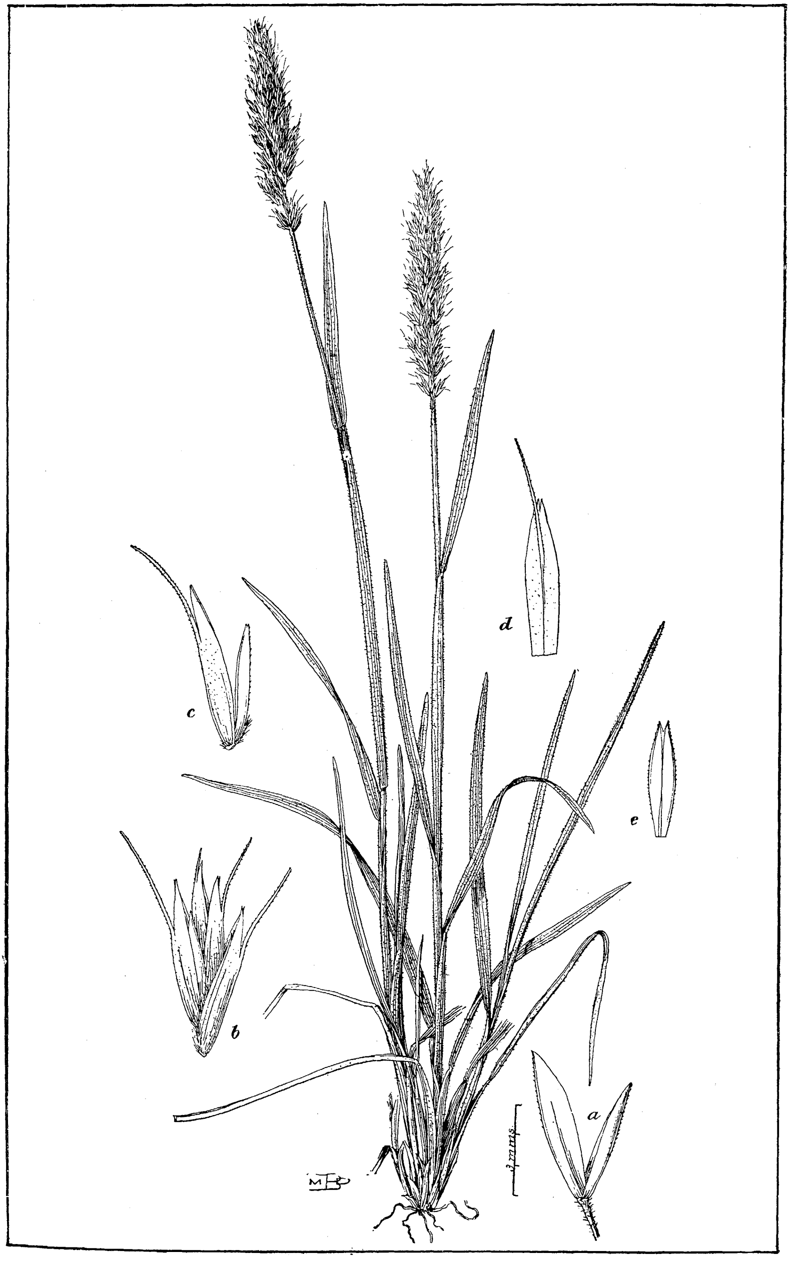
DEYEUXIA DENSIFLORA, Presl (1) D. OVATA, Presl (2).



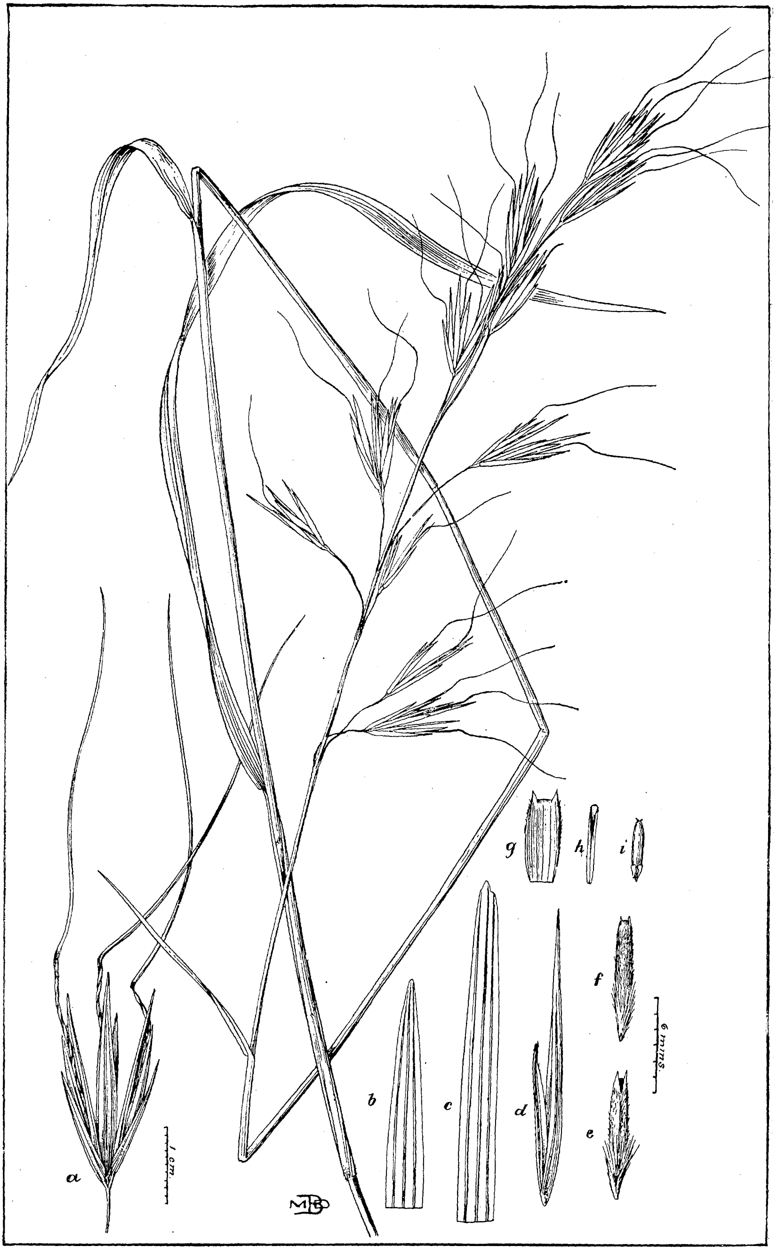
DEYEUXIA FUSCATA, PRESL.



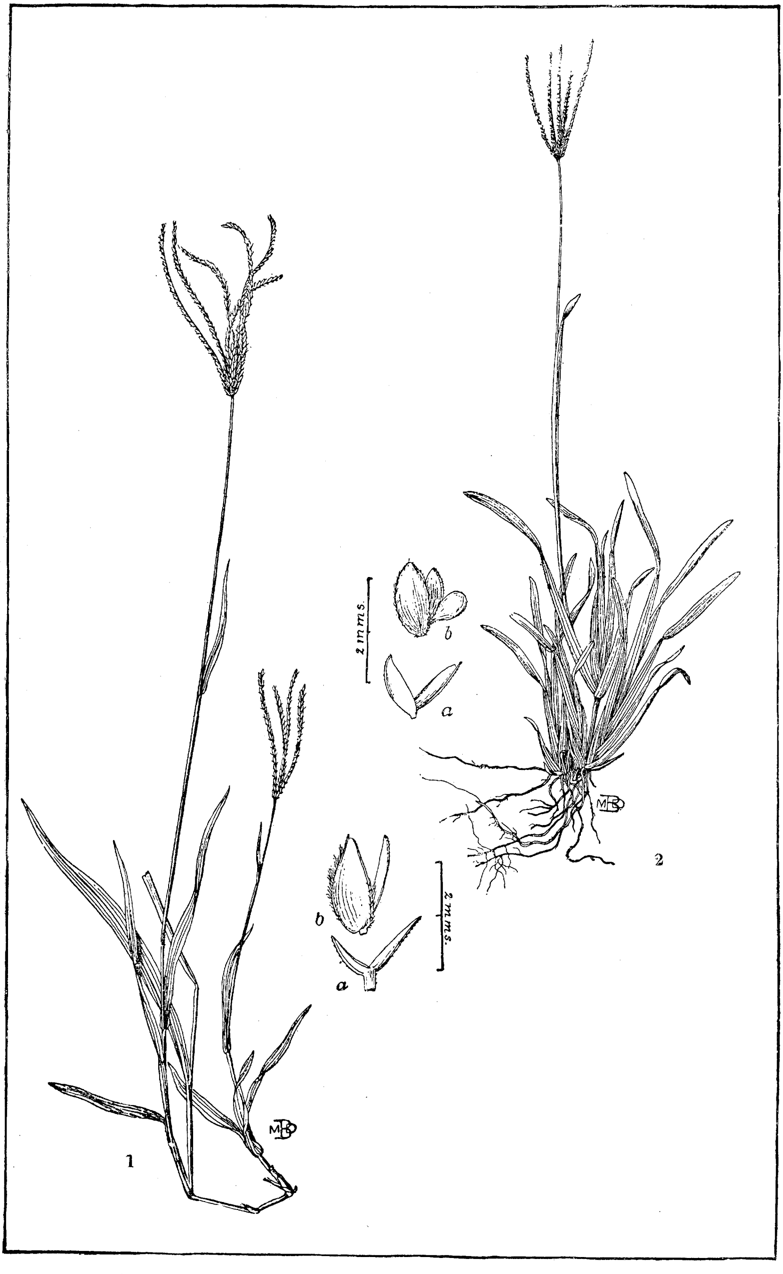
DESCHAMPSIA CALYCINA, PRESL.



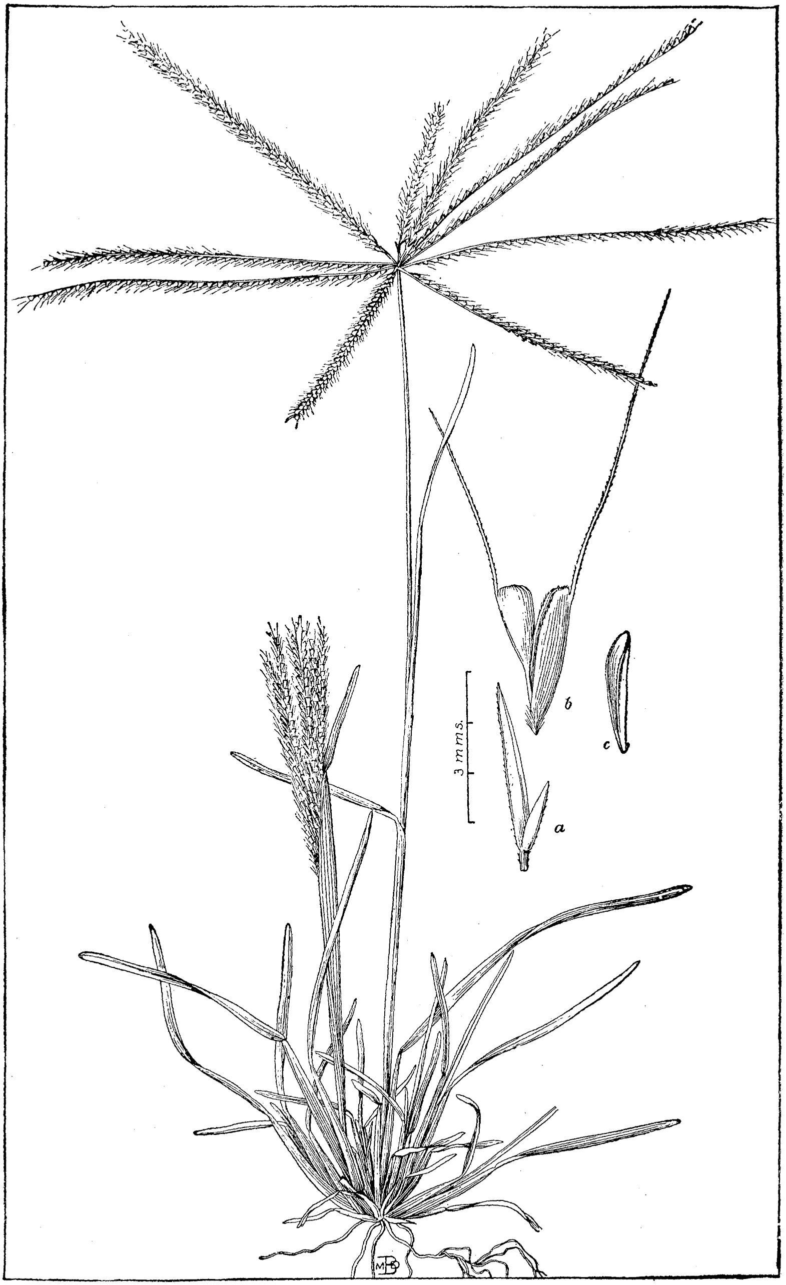
AVENA PILOSA, PRESL.



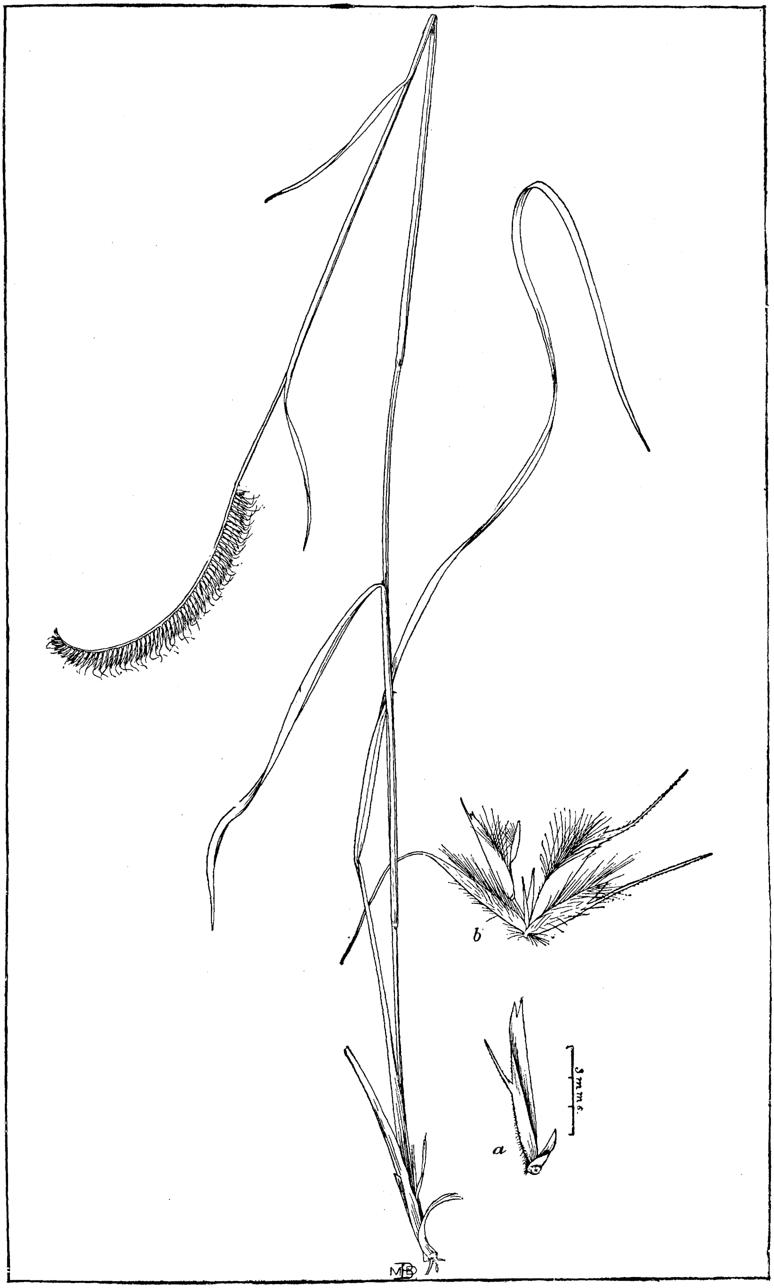
MONOPOGON AVENACEUS, Presl.



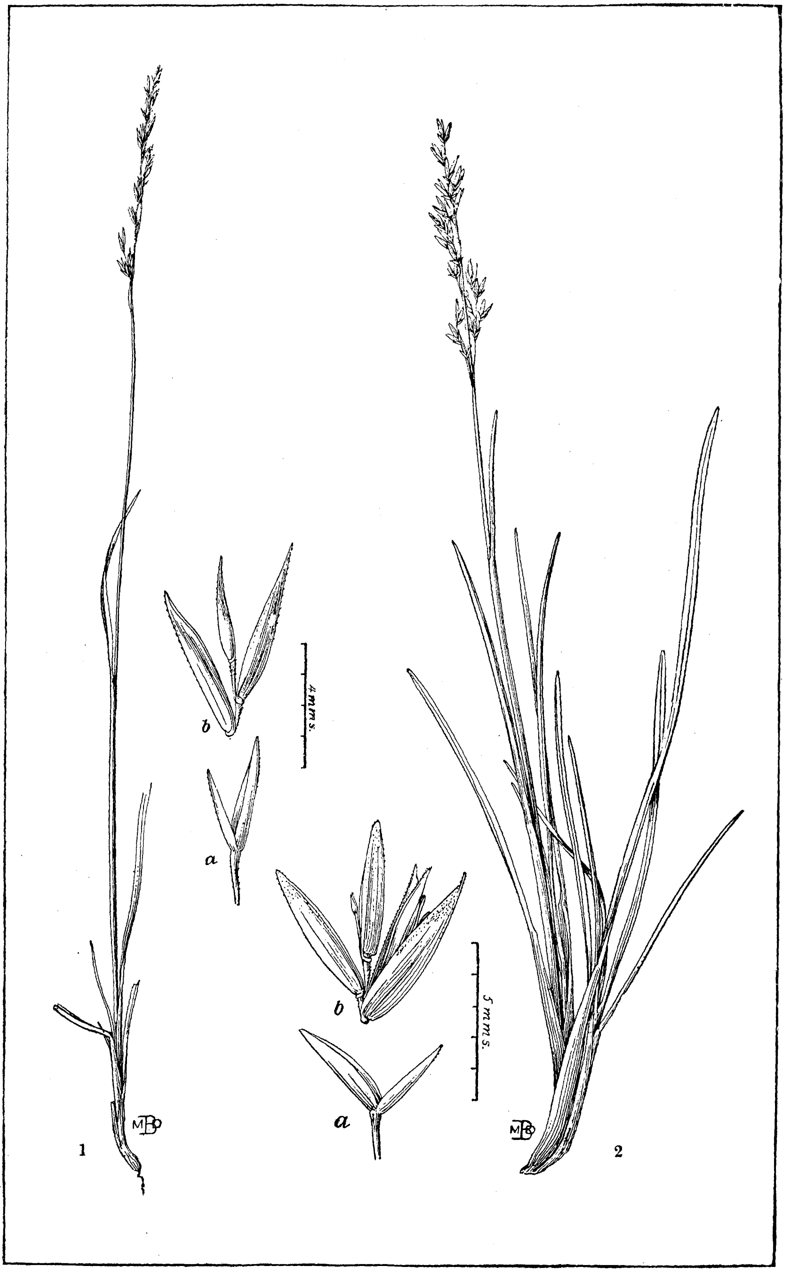
CYNODON ARCUATUS, Presl (1). C. TENER, Presl (2).



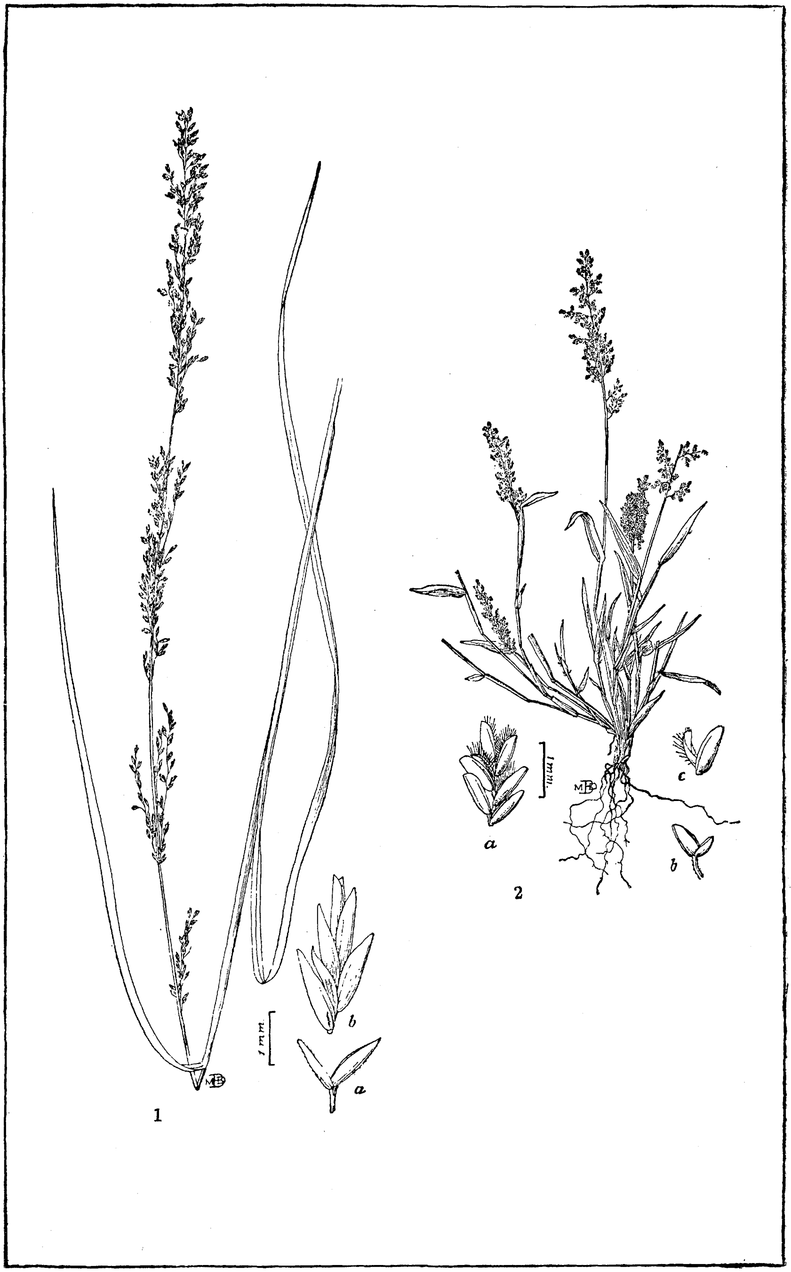
CHLORIS TRUNCATA, R. BR.



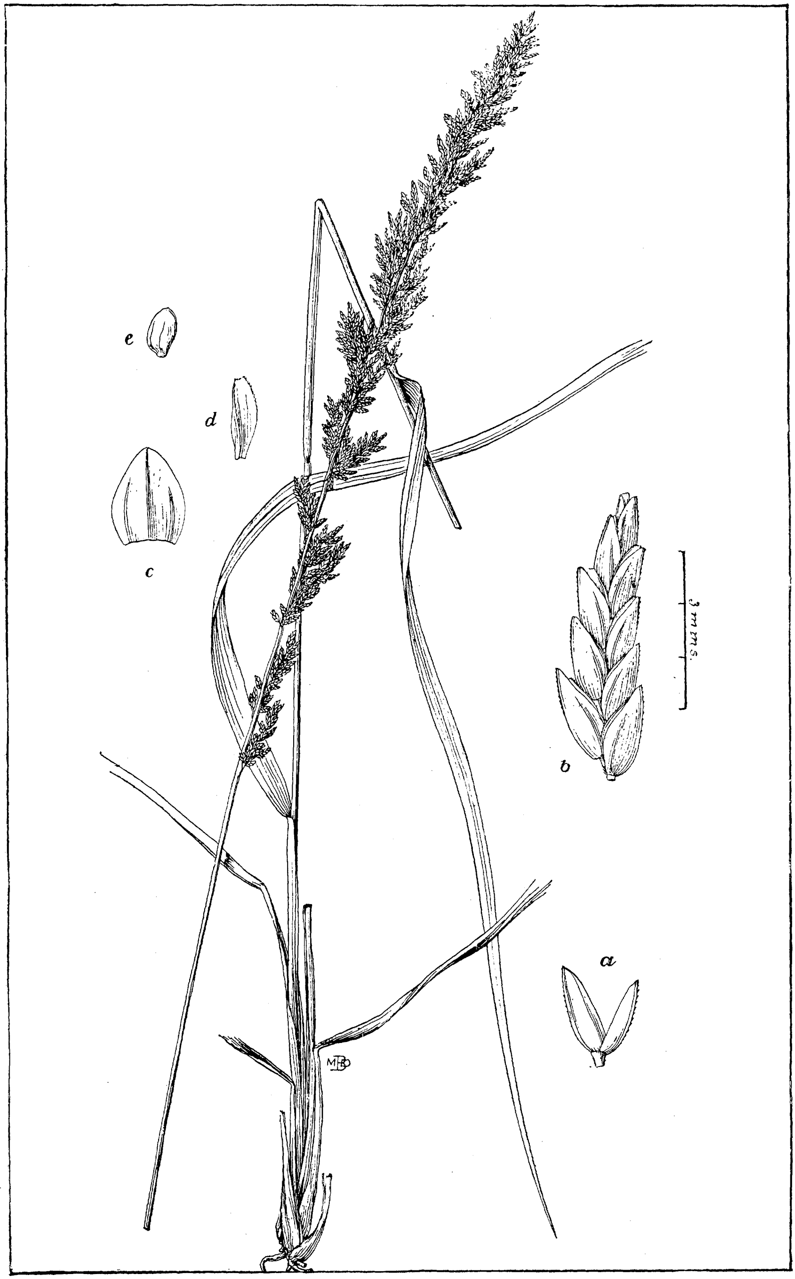
CAMPULOSUS PLANIFOLIUS, PRESL.



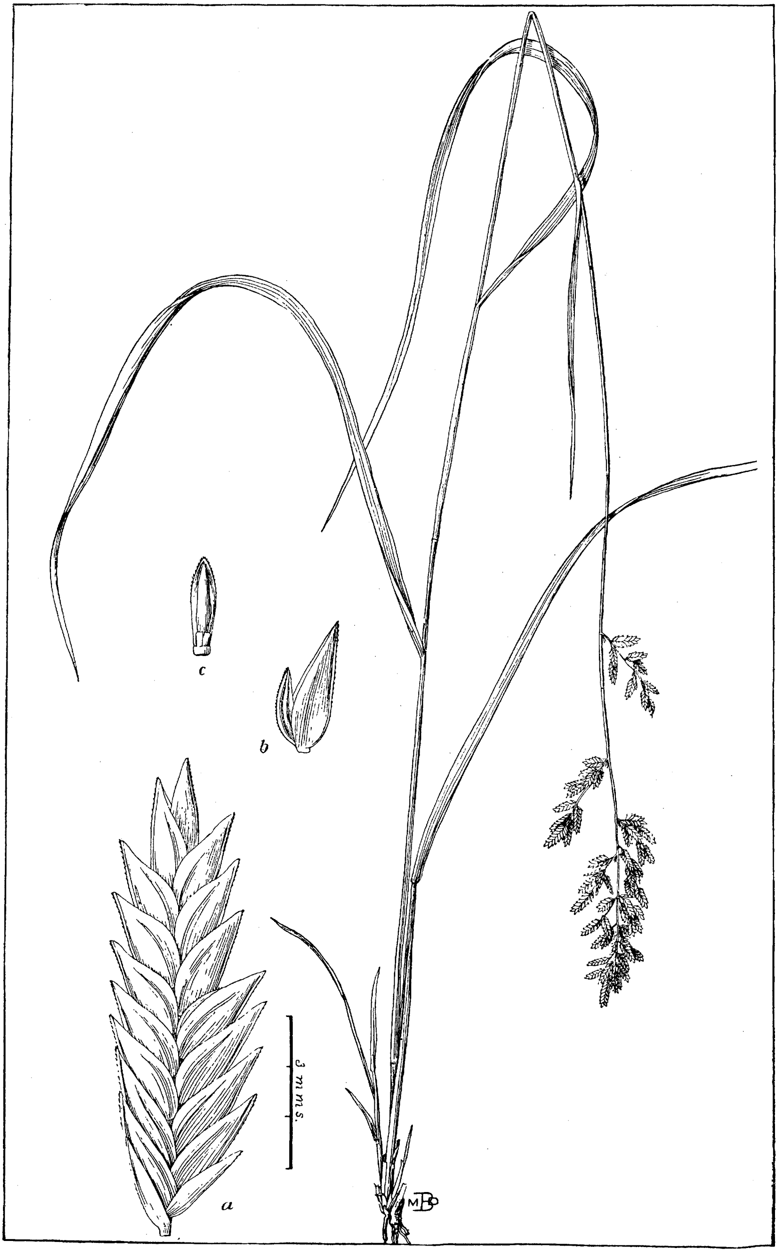
DIPLACHNE BREVIFOLIA, PRESL (1). D. RIGESCENS, PRESL (2).



ERAGROSTIS ALBA, PRESL (1). E. TENELLA, BEAUV. (2).



ERAGROSTIS LURIDA, PRESL.



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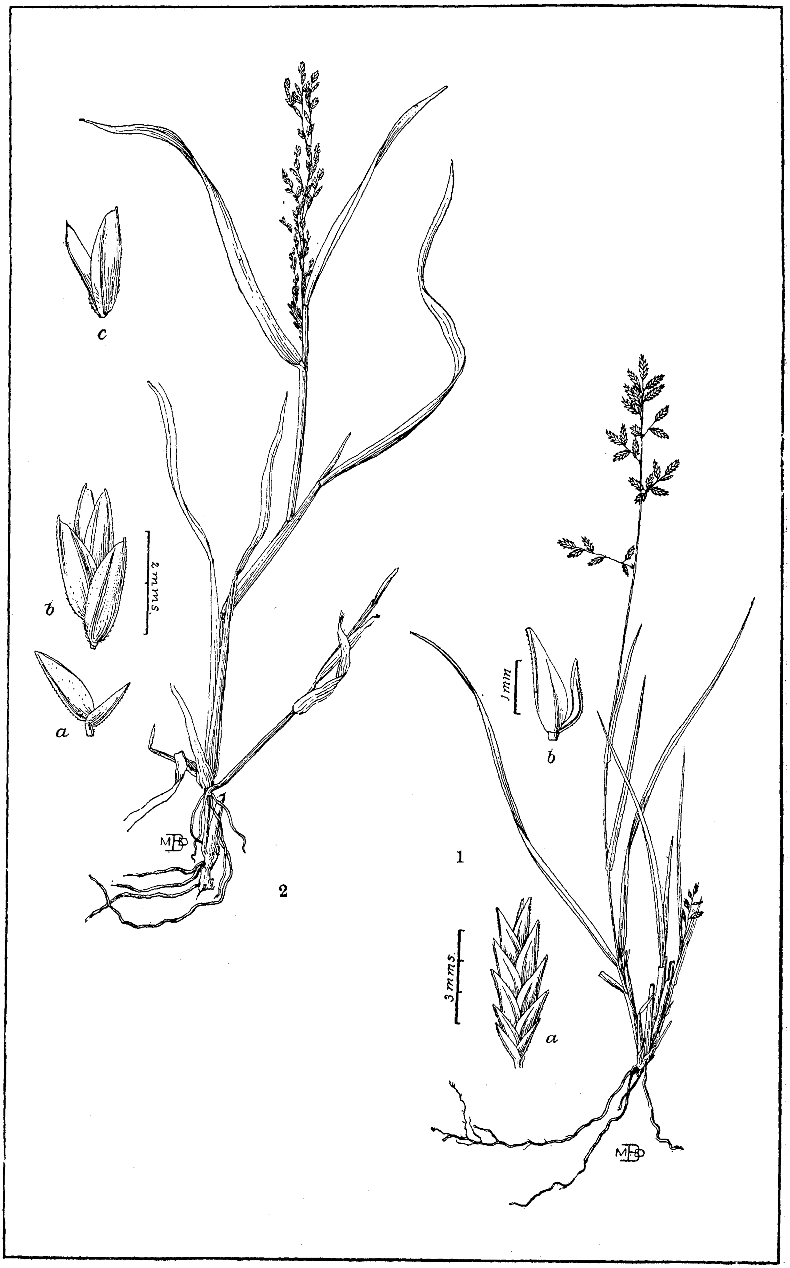
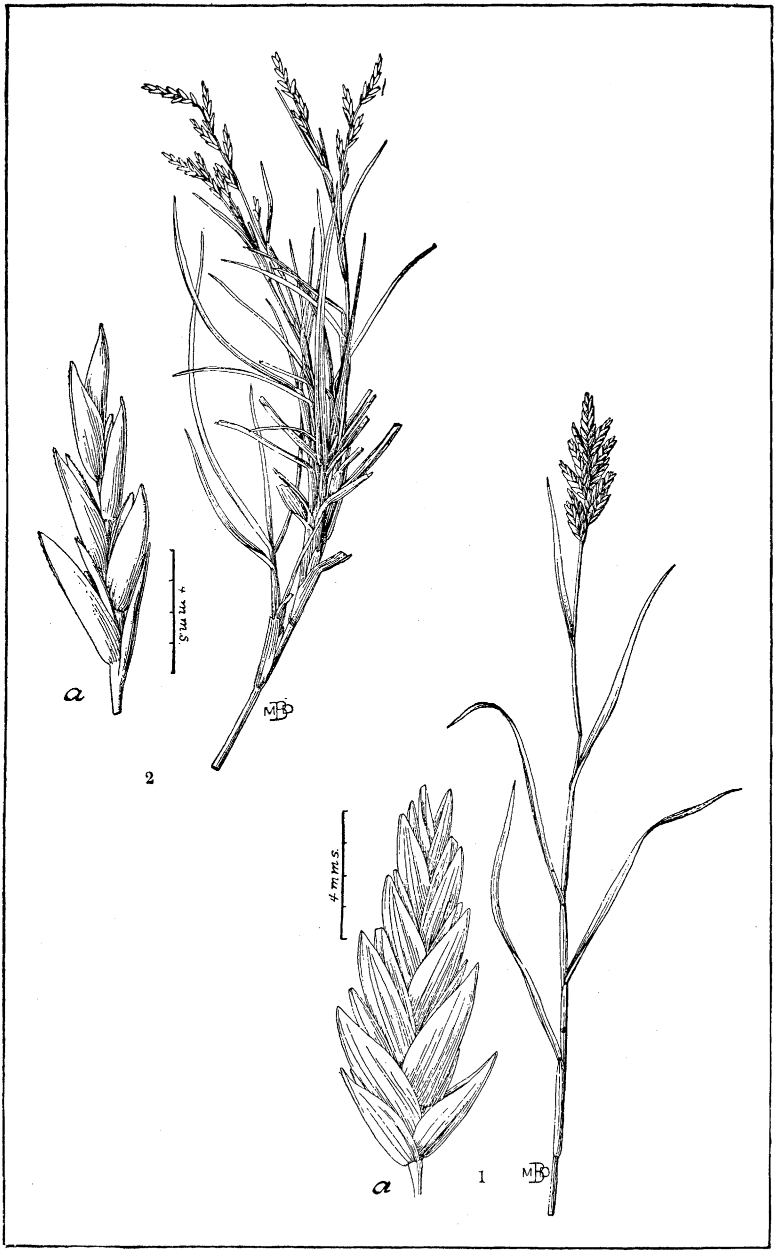


ERAGROSTIS PANAMENSIS, PRESL (1). MEGASTACHYA PANICOIDES, PRESL (2).



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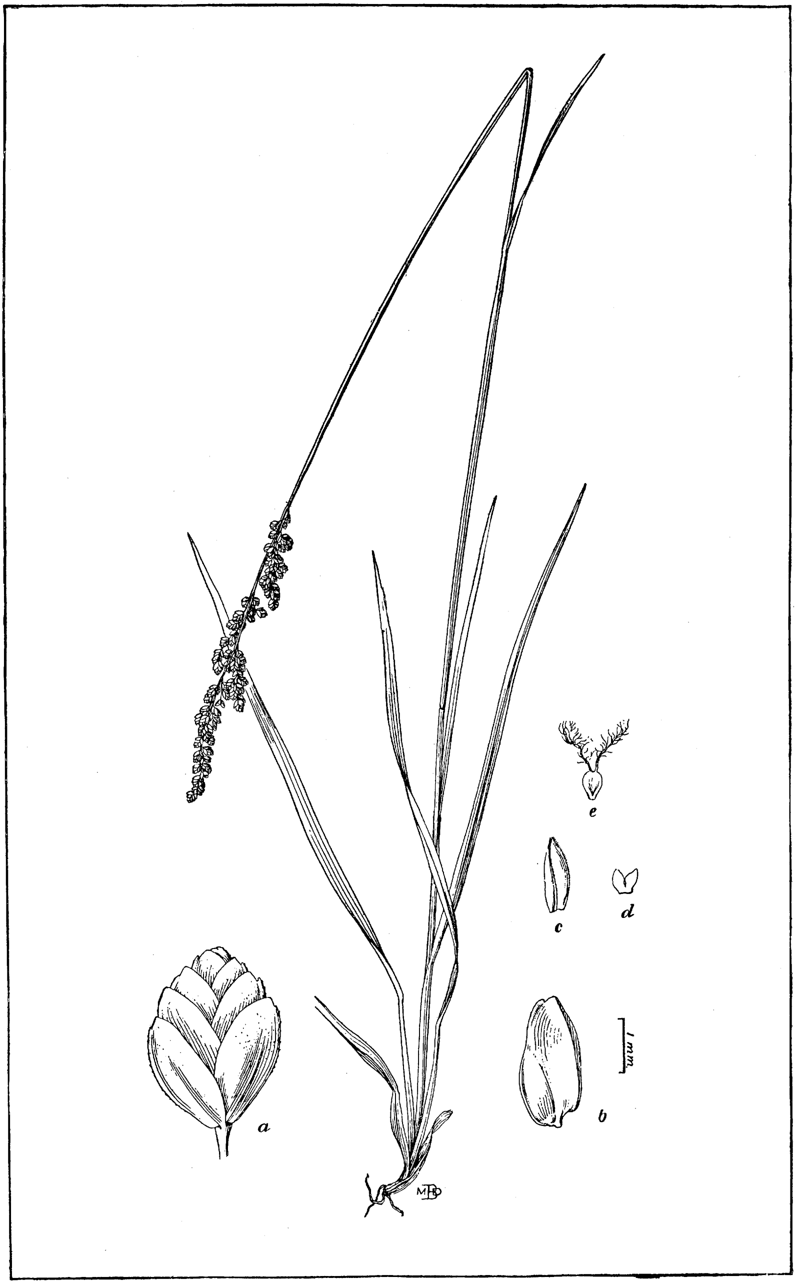
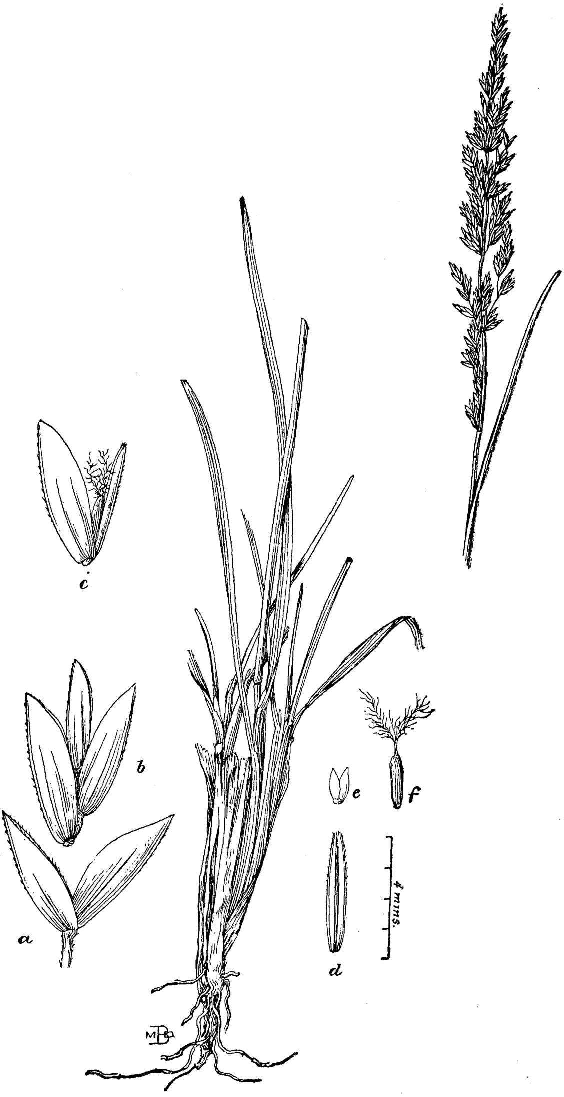
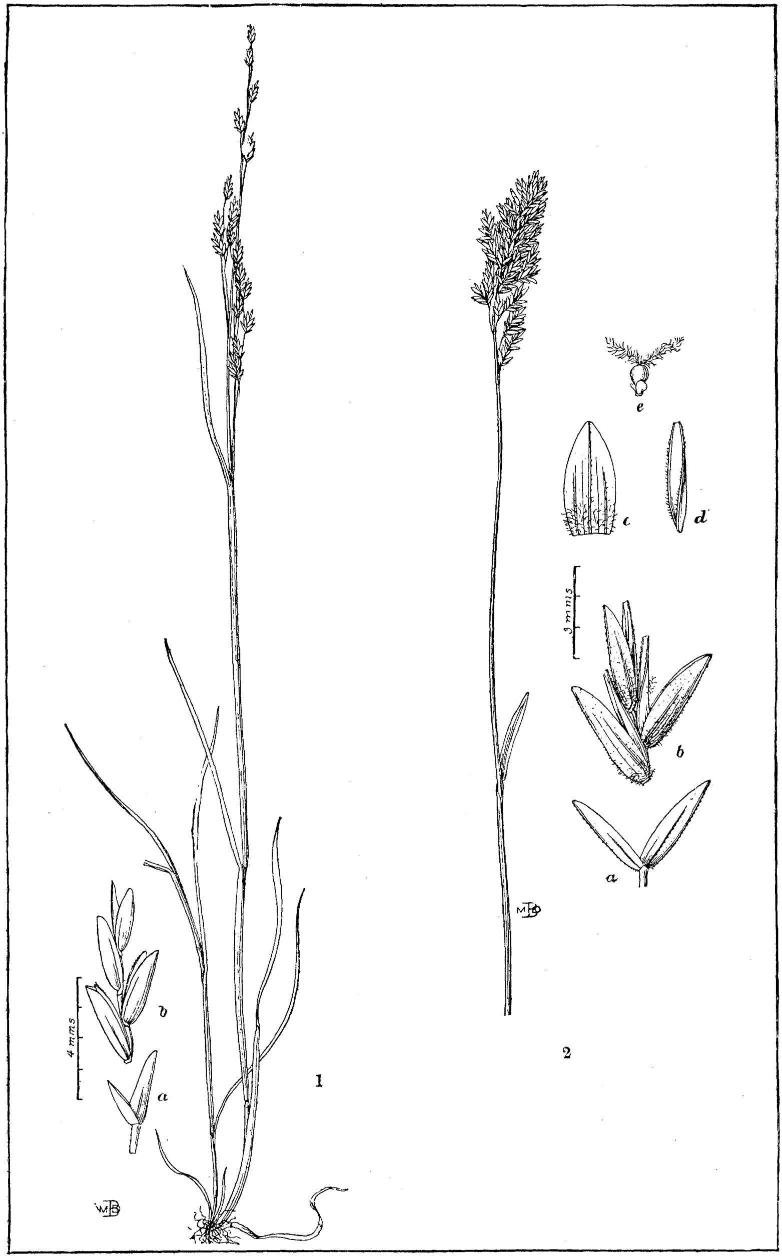


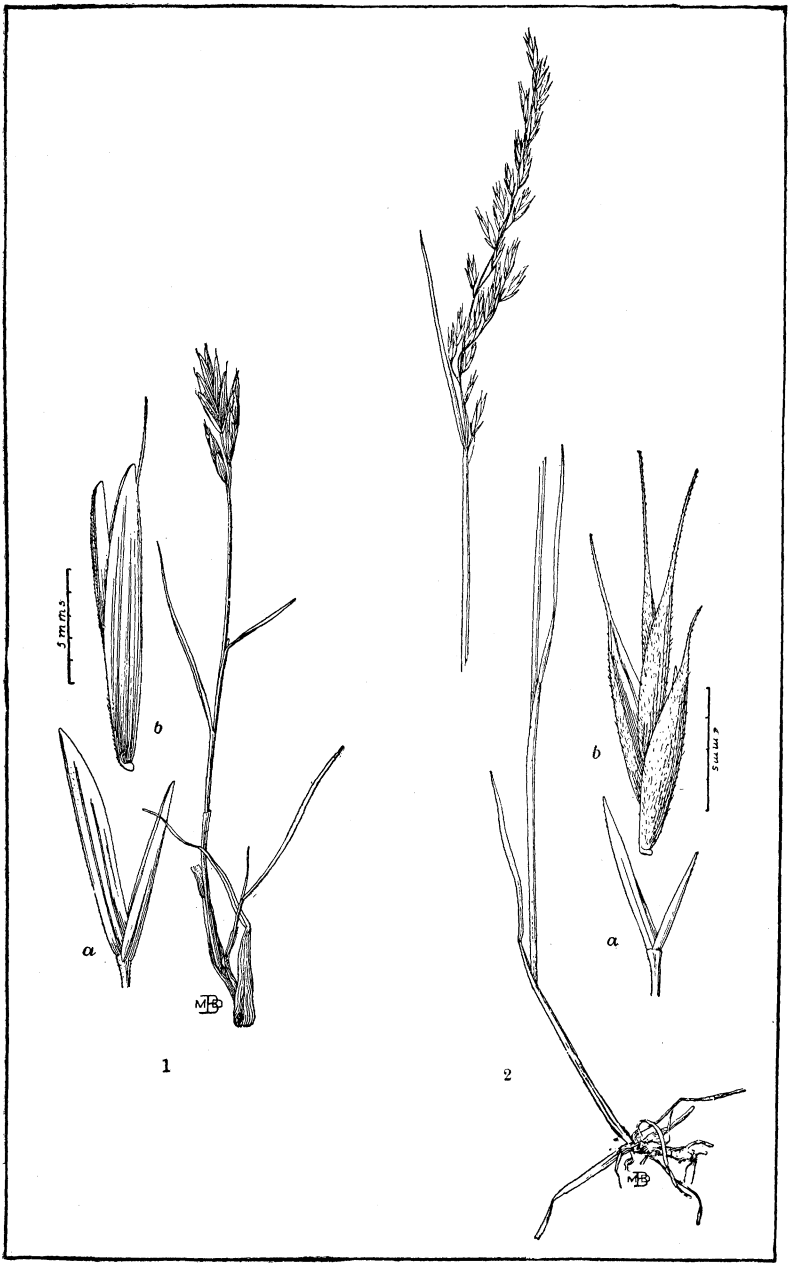
CHASCOLYTRUM SPICIGERUM, PRESL.



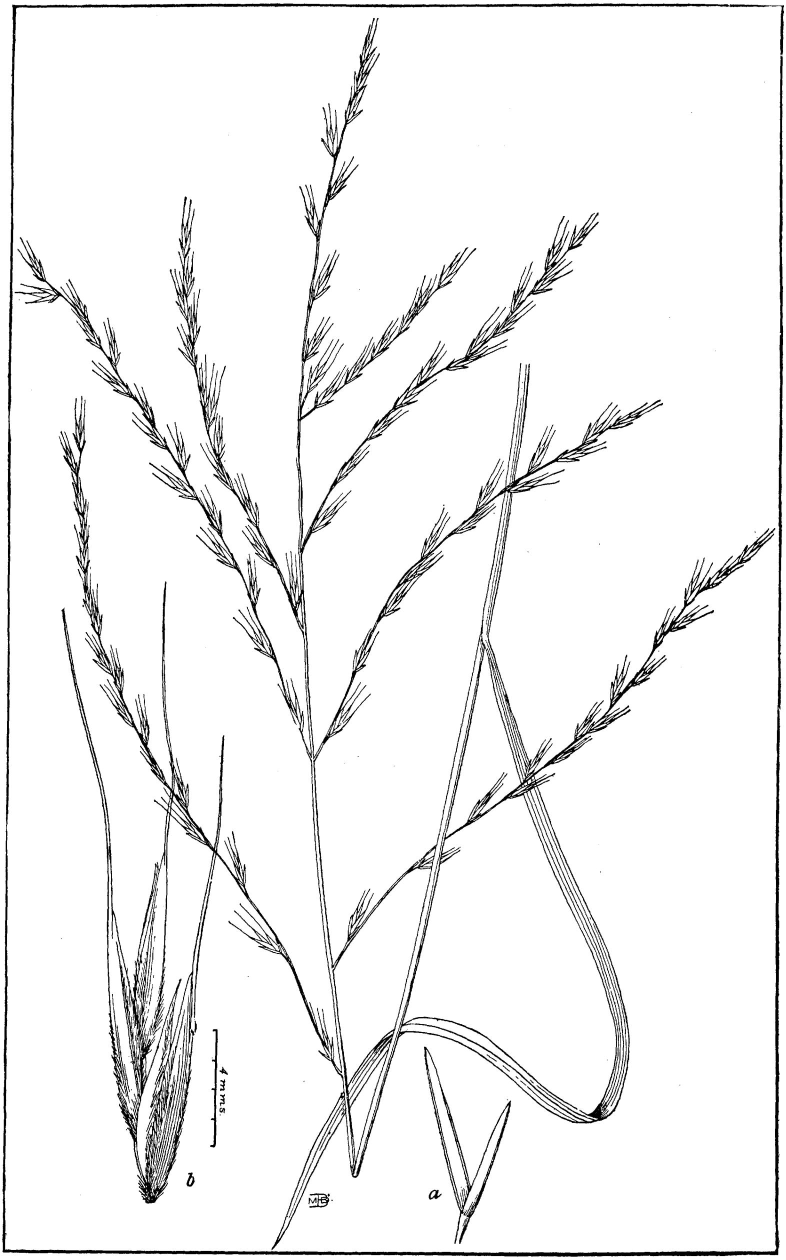
POA HOLCIFORMIS, PRESL.



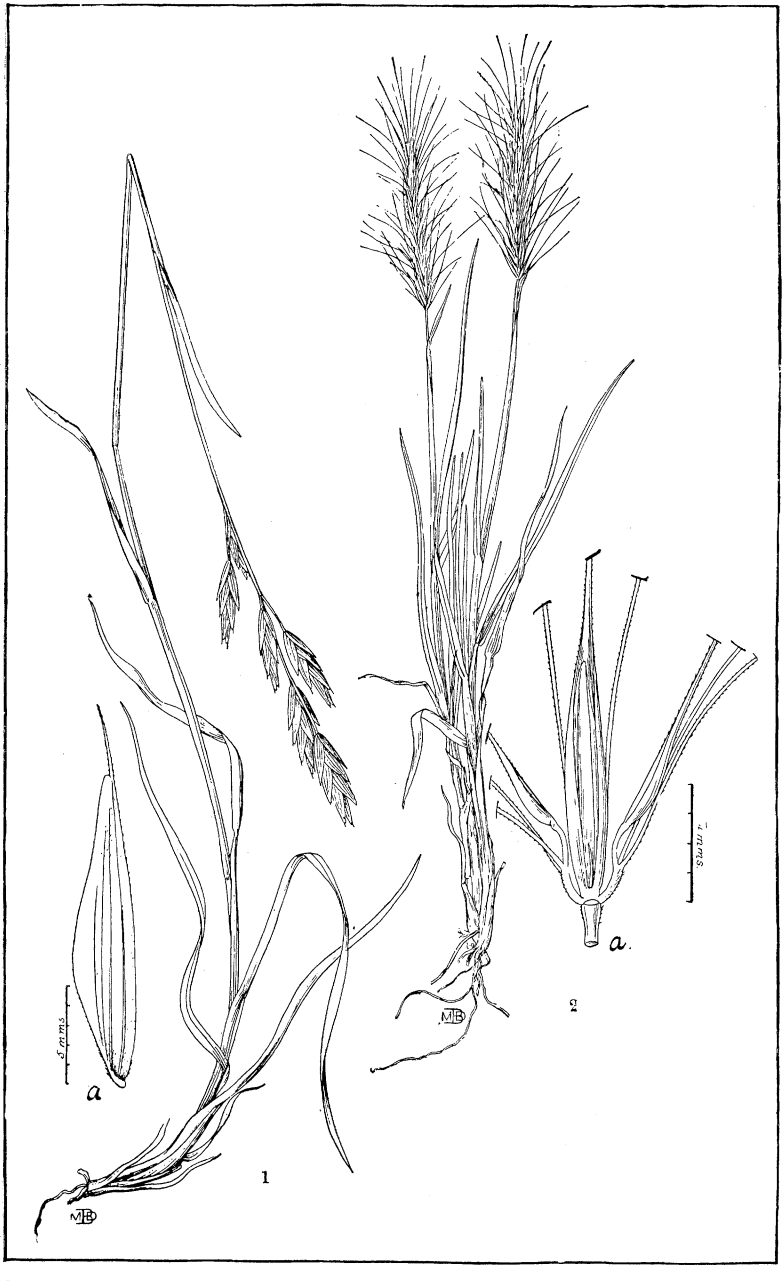
POA NOOTKAENSIS, PRESL (1). P. SECUNDA PRESL (2).



BROMUS SETIFOLIUS, PRESL (1). B. SECUNDUS, PRESL (2).



BROMUS VIRGATUS, PRESL.



CERATOCHLOA HAENKEANA, PRESL (1). HORDEUM COMOSUM, PRESL (2).